Product Range

sabiana.it

SABIANA — We want to give people what is so important for their well-being: a natural, pleasant atmosphere in every room.

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Radiant panels

Unit heaters

Fan coils

Recovery units

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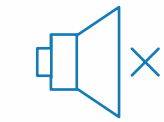
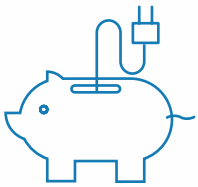
Water inspires us.

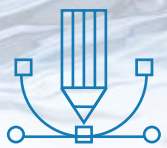
Sabiana is an Italian company that has been specialised in the production and sale of heating and air conditioning products and systems for over 95 years. Sabiana products do not use chemical fluids, but only **water**. A natural element with zero environmental impact, extremely efficient in ensuring a high level of comfort in any environment simply through its heating/cooling and its heat exchange with air.





Sabiana's Research & Development department has always paid great attention to three important aspects: **the level of noise emissions**, **air quality** and **energy consumption** of its products, with three important firsts:

- 1973 - the first Italian company to introduce radiant ceiling panels in industrial environments, providing heating without any noise.
- 1993 - the first Italian company to apply a patented electronic filter to a wide range of air conditioners.
- 2009 - the first company in the world to use hydronic cassette fan coils with low power consumption electronic motors.



All Sabiana products are also characterised by a sophisticated **design** and a wide range of finishes, which by **combining aesthetics and functionality** make them suitable for any architectural context.

Almost 50% of turnover is in **foreign markets**, especially in Europe, North and South America and the Middle East, with over 50 exclusive distributors. In Italy, Sabiana can count on **a network of 42 sales agencies** available to the customer for advice and after-sales support.

History

1929

Sabiana was **founded in 1929** by Franco Binaghi, who is Lombard and addicted to mechanics and Benvenuto Anatrella, an enterprising Tuscan with great entrepreneurial skills. Their partnership, which started with a handshake and immediate mutual understanding, is still honoured with the same enthusiasm by the heirs of the two historic founders. In 95 years of passion and research, Sabiana pursues its original mission by producing and marketing high quality products, to ensure the best comfort levels in all living and work environments.

Sabiana headquarter in the '40s

The production department in the '60s

1935

In 1935 Sabiana develops and launches **its first electrical unit heater**, inaugurating the production of hot water unit heaters just a few months after the end of the Second World War. These prototypes will lead to the development of the unit heaters that, in 7 different types, still ensure air conditioning in thousands of buildings all over the world.

70s

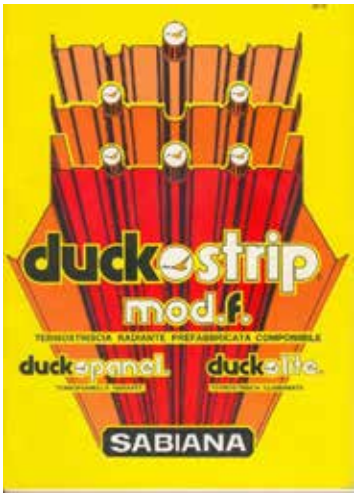
In the early 70s, during the first major global energy crisis, Sabiana proposes **an innovative heating solution with radiant panels** installed at a height of 12 metres for the Alfa Romeo factory in Arese. Although not yet in production, Sabiana accepts the order, delivering and installing the first 10 km of radiant panels. The test is a success. In the following years, it will supply Alfa Romeo with another 20 km of radiant panels, and the product, now permanently in production, will be used in over 30,000 installations, including industrial warehouses, shopping centres, sports and recreational facilities, zootechnical facilities, etc., which are proof of the solution's quality, adopted even in the vast Airbus factory in Toulouse.

Towards the end of the 70s, air conditioning is increasingly required in offices and commercial spaces. The heat convector, designed and sold mainly for domestic use, is gradually replaced by what would later become one of the most popular air conditioning systems and the most important product of the Sabiana range: **the fan coil**.

These are the golden years of Italian Design, in which the iconic names of industrial design become established worldwide. Sabiana begins a successful collaboration with one of these leading industrial designers, **Lorenzo Bonfanti, the winner of the Compasso d'Oro**, leading to the development of the Helios air unit heater, which is still a symbol of how an elegant and timeless product can be designed and marketed, even though it is intended for industrial environments.

Thanks to the innovative design of the **Futura fan coil**, Sabiana becomes popular not only with the most important designers, but also draws the attention of many architects, traditionally very critical regarding any air conditioning units, usually characterised by a strong visual impact and ungraceful aesthetics.

Thanks to the high standards of reliability, low noise and design of its products, Sabiana gains a prominent position in the increasingly competitive air conditioning market, among large multinational companies.



1995

In 1995 Luigi Bontempi designs and patents **the revolutionary Crystall**, an electrostatic filter, which can be installed on all fan coils produced by the company. An innovative solution, which significantly improves the air quality in work environments, capturing numerous pollutants from the air such as smoke, dusts, fibres or microbiological substances such as bacteria or fungi. The filter will then be applied to other products, also thanks to widespread dissemination and training activities implemented by Sabiana, organising several technical meetings dedicated to indoor air quality (IAQ).

The 90s are marked by two other important strategic decisions for the company: **the beginning of an own production of stainless steel flues, the expansion of the range of water-operated air conditioning products**, along with a complete series of very versatile and high quality air handling units, produced either in series or according to specific customer needs and able to meet the ever-increasing demands for indoor comfort.

2004

At the Mostra-Convegno Expo Comfort in Milan, Sabiana presents the **SkyStar Cassette fan coil unit**, the result of great technical and stylistic research aimed at offering cutting-edge products in terms of performance, low noise and control flexibility.

The air intake and diffuser grille is **highly stylish** and is capable of ensuring **excellent performance**, thanks to a meticulous design and extensive laboratory tests. It is the definitive statement of Sabiana in the fan coil industry and places the company at the top of European production, increasing its export share by 45% in 2010.

2009

Sabiana is the first company on the market to introduce **cassette fan coil units with inverter-controlled, permanent magnet, sensorless and brushless synchronous electronic motors**.
The power consumption decreases by over 50% and, thanks to the continuous variation of the air flow rate, it increases the precision of the ambient temperature control, while reducing the perceived average noise level. This revolutionary technology has an immediate market success, and generates 10% of the company's total sales in just two years.

2010

At the Mostra-Convegno Expo Comfort in Milan, Sabiana presents the new **Carisma fan coil unit**, featuring a beautiful design, which reinterprets the iconic Futura style, a product that represents the new generation. Carisma, which ensures high performance in relation to power consumption and noise levels - among the lowest on the market - is produced in **the new factory in Magenta** (MI), a very modern structure of over 9,000 m², entirely dedicated to fan coils.

2011

All Sabiana fan coils are also offered with inverter-controlled electronic motors, the only ones capable of meeting the class A requirements, which were just introduced voluntarily by Eurovent, the main European performance certification company.

2012

The production of the new Carisma Fly high wall fan coil starts. Designed with simple and essential lines, it is entirely manufactured in the Sabiana factories and it comes in a wide range of versions, including several featuring low energy consumption.

2014 On 1 July 2014 Sabiana became a member of the **AFG Group, Arbonia-Forster-Holding AG**, an international group and technological leader in the production of construction materials. In this way, **the company is ready to become a major player in the global market**.

2015 At the beginning of 2015, the new range of **Meltemi door curtains** is developed by Sabiana. Thanks to the performance ,that is in compliance with the European regulation No. 327/2011 and to a versatile and contemporary design, Meltemi is launched as a top-of-the-range product for the protection of entrances of industrial and commercial environments, as well as sports and recreational facilities, such as shops, supermarkets or cinemas.

2016 In the second half of 2016, Sabiana presents a new air handling product: the **Energy Plus recovery unit**. Such ducted units, equipped with continuous modulation motors with low energy consumption, ensure recovery up to 94%, placing Sabiana among the leading companies in the sector. All units are immediately ERP 2018-certified, in compliance with the European Ecodesign Directive (EU Regulation 1253/14).

Following new acquisitions and a position increasingly focused on the construction industry, AFG becomes **Arbonia Group**. The new international group, also thanks to the contribution of Sabiana, soon confirms its leadership among manufacturers of construction components.

A company of Arbonia Group
ARBONIA

arbonia

KERMI

2017

In order to maintain and further improve its position in an increasingly demanding and competitive market, Sabiana undergoes **a major corporate renewal process**, investing in training and acquiring new skills and new professionals.
The new offices built at the Corbetta (MI) headquarters are dedicated to the enhanced Customer Care department.

Two years of research and development, in collaboration with German and Swiss colleagues, lead to the new creation of the new **Energy Smart residential recovery unit**. Entirely designed and built at the Sabiana factories, the new product is presented at the ISH trade fair in Frankfurt, right now successfully.
The performance and ease of installation of Energy Smart place it in the high end of the market, while maintaining a particularly competitive price thanks to its compact size, that is the result of careful design.
The extensive Energy Smart range comes in vertical and horizontal versions, available both in class A + and in class A. All units comply with the strict 2018 efficiency limits imposed by regulation 1253/14.

2018

In March, at the Mostra-Convegno Expo Comfort in Milan, the innovative **Cassette SkyStar Jumbo Fan Coil Unit** had been introduced.
Conceived in two new models and in different versions, with performances and features that allow to enlarge the application of this product to installations so far unthinkable, it was put into production afterward.

2019

ENY-SHP-130 and **ENY-SHP-150** are the new Sabiana units added to the range of high-efficiency residential ventilation units with Energy Smart heat recovery unit.

They stand out for their compact size that makes them easy to install both horizontally on a false ceiling or wall-mounted vertically.

Moreover, to complete the supply of residential ventilation units, Sabiana introduces **Energy Easy**, the compact heat recovery decentralized ventilation system.

2020

Sabiana introduces **Carisma Whisper**, the residential fan coil more **silent and compact** on the market. An excellence that comes from a tangential fan with double aspiration and from a brushless EC motor at low energy consumption, integrated in a casing of design, available also into the recessed version.

2021

The **Ocean ECM** ceiling double insulated panel fan coils are perfectly suited to meet all of the climate control needs of work environments such as offices, shops, restaurants and hotel rooms featuring ducted installations with high available pressure. They are available into the compact version (fan assembly, coil and filter) and into the modular version. They are suitable **for heating and cooling small and medium-sized environments**.

The **range of the Energy Plus high-efficiency recovery ventilation units** includes the Energy Plus V vertical version. They are designed to provide centralised air exchange service into the commercial environments or residential blocks, complying with ErP 2018 requirements and ensuring high standards of fresh air filtration.

The Energy Plus V are full fresh air units and are designed to guarantee almost absolute separation of the supply and extraction flows and maximum heat recovery.

The **Cool Breeze evaporative cooler** uses the natural principle of water evaporation to lower the air temperature. General premises with large volumes can find in this product the solution for the hot periods of the year, **the given drop in temperature combined with air ventilation** given by the large air changes supplied result in an excellent comfort level in the building.

2022

The **Neptun** air handling units are specifically designed and produced with the dual aim to keep a correct humidity level inside the indoor pools and, at the same time, to ensure an elevated comfort level for the occupants. The units of the Neptun range are made with high level components, in order to guarantee maximum performances and reliability.

Furthermore, all the UTA Neptun are completely regulated and equipped with a user-friendly interface, supplying in this way to those who manage the installation a steady and precise control of the thermohygrometers parameters, by giving further tranquility to the swimming-pool ownership.

Carisma Whisper CFF is the super-thin fan coil unit with asynchronous motor at 6-speeds, 3 of which connected, designed and produced entirely in Italy of Sabiana quality, fine design to be perfectly fitted in all residential and commercial environments.

The most silent on the market thanks to the tangential fan and to all Sabiana design precautions.

Available in 4 sizes in the version with casing, without control or with control fitted on site and into the recessed version (to be used with the Breeze kit for concealed installation).

The **Energy ENY-VAV** and **Energy ENY-SIL** are compact units for the regulation of variable air flow rate; with the Energy VAV the supply air and the aspiration air is distributed and partialized in every room according to one's own need (by using an air flow restrictor).

The Energy VAV units are extremely adaptable and can be used for both, the residential and commercial environments.

The Energy SIL silencer is able to limit significantly the level of noise entered into the environments, by improving the acoustic comfort.

2024

The **Carisma Whisper CFF-ECM OW** fan coil is conceived for installations into the false ceiling, with a compact design and a low profile that allows a perfect integration into the residential and commercial ambients. Equipped with EC brushless motor at a low energy consumption, it guarantees an optimal comfort with an ultra quiet functioning. The air diffusion flap is adjustable at a distance for a uniform distribution, whereas the condensation pump operates quietly. It is available with 2 pipe installations, it offers maximum flexibility into the heating and cooling applications.

The **Carisma Whisper CFF-ECM MVM** model is characterised by a casing completely of metal, with air supply grid of anodized aluminium that combines robustness and elegant design. Ideal for commercial and residential ambients, it is equipped with a brushless electronic motor with BLAC electronic board, that allows a precise air flow control and a higher energy efficiency. The MVM version guarantees excellent sound power and offers advanced connectivity options for a user-friendly management via CB-Touch controls.

The **Zeus ECM** range is conceived for industrial and civil applications that require high air flows and installation versatility.

Equipped with motor-fan assemblies of EC Plug-Fan type, the range offers energy efficiency and adaptability, with modular components that allow modifications on the spot. The aluminium casing and insulated panels assure solidity and optimal thermal insulation.

The units are available with removable coils and various filtration options to satisfy the different air quality needs.

Sabiana today

Today Sabiana is an Italian company that directly employs over **280 people**, with **four factories** near Milan for an overall 60,000 m^2 of surface area.

71% of the electricity consumed is produced by three photovoltaic systems for an overall 1,65 Megawatts, perfectly integrated in the architectural structure of the buildings.

3D design and **testing and inspection laboratories**, besides allowing for the creation of reliable products that are long-lasting, also ensure the constant development of new products and upgrading of existing ones, to bring them up to date with the continuously evolving reference standards, quality of comfort and the lower energy consumption required for the buildings.

Airbus A380

Sheraton

Intesa San Paolo

Ikea

Large manufacturing companies (Airbus), large hotel chains (Sheraton), large banks (Intesa San Paolo) and large distribution chains (Ikea), to name only a few, which have always been accustomed to a careful choice of every component within the air conditioning system, have chosen to rely on the solutions offered by Sabiana.

Sabiana company is ISO 9001-certified since 1996 and **ISO 14001 since 2023** for Sabiana 2, Sabiana 3 and Sabiana 4 factories with all products in compliance with European standards and directives and, where existing, with quality and control certifications for declared performance. Sabiana is moreover faithful to the deep-rooted promise of its two founders: *"We will always be with you, people whose job is to project, distribute or install our products, to help you professionally and in such a way that you can take priceless satisfaction in having done a good work".*

Sabiana 2 and Sabiana 3 - Operative unit "via Virgilio 2 - Magenta (MI)"
Sabiana 4 - Operative unit "via Zanella 27 - Corbetta (MI)"

Certificate n. 16.05.03
Air handling units

Certificate n. 96.01.182
Fan coils

Certificate n. 0051 - CPR - 0004
Inox25 flues

Certificate n. 0051 - CPR - 0009
Inox50 flues

Certificate n. 0051 - CPR - 0062
InoxMono flues

Main product lines

The wide range of Sabiana products allows specialised designers to find the most suitable solution for their system, relying on the experience and products of a leading European company.

Radiant panels

Unit heaters

Fan coils

Filters

Recovery units

Air handling units and Filters

Flues

Electric units

Main product lines

Since 1973, **over 30,000 installations of Sabiana radiant ceiling panels** are proof of the quality of this system, which ensures fully silent heating and cooling, with no air movement, with a uniform temperature throughout the environment, with no danger of fire and great energy savings. There are two main product lines, one for industrial environments and the other one for the service sector.

Since 1950, Sabiana has been producing hot water and steam **unit heaters** for heating industrial and commercial environments, with proprietary production technology and with a wide range of solutions.

Since 1980, Sabiana has been producing **fan coils** featuring a careful design, very low noise levels and power consumption, paying great attention to energy savings. Every fan coil is available with the latest inverter-driven brushless and sensorless electronic motors. Performance is certified by an independent institution (Eurovent).

Eight product lines are available with a wide range of accessories and controls, among which there is an electrostatic filter and a control system with wireless technology, both patented, for comfortable climate control of the most varied work and living environments. The Sabiana fan coil is today one of the reference products in Europe and is at the top of a particularly competitive market.

Since 1990, Sabiana has been producing **air handling units** with an air flow of 1,000 to 80,000 m^3/h, made to measure according to individual customer specifications, using efficient configuration and selection software.

There are three product lines with single and double panels, able to meet the air exchange and air conditioning requirements of the most varied work and living environments, thanks to efficient technical solutions capable of significantly reducing a building's energy consumption (recovery units, inverter-driven motors, electronic filters).

Since 1985, Sabiana has been selling - and since 1997 has been manufacturing - **single and double-wall stainless steel flues** for the evacuation of flue gas from boilers. Along with the steel product lines, there are also the plastic ones, which are suitable for the latest generation of condensing boilers.

Radiant panels

Sabiana has been designing, manufacturing and selling radiant panels since 1971 and it is now the most important European company and the undisputed sector leader. In 2005, the company started to manufacture **Pulsar** radiant panels, conceived and intended to cover the needs of commercial applications.

Since then, over 30,000 installations in all types of environments (small, medium, large industries, shopping centres, airplane hangars, sports and recreational facilities, zootechnical premises) are testimony to the soundness of the product, with constantly new and highly innovative applications – such as the increasingly popular air conditioning of production facilities in summer – to guarantee the highest levels of comfort throughout the year and unchanged levels of productivity, even during the hot summer months.

Heating by radiation means absolute silence. There is no movement of air, the temperature is the same throughout the entire space and there is no fire hazard. This type of heating saves energy, since it heats people, the walls and the floor directly, while heating the air indirectly, reducing heat stratification to a minimum. This allows for space optimisation, since all the walls and floors remain available to users. They also guarantee efficiency that remains unchanged over time, while the product requires no routine maintenance. Users will have the peace of mind that, year after year, at the start of each season, the product will provide them with unparalleled comfort.
In 2018, Sabiana introduced the new generation of radiant panels, the **Duck Strip 4.1**, which represent the most advanced evolution of hot water radiant ceiling heating systems. The new radiant panels are built in compliance with the European Standard EN 14037 in force and are manufactured according to the National Industry 4.0 Plan, with industrial automation that integrates some new production technologies that improve working conditions and increase the productivity and functional quality of the installations – all this with an eye on energy consumption, creating more efficient systems and reducing any waste of energy according to the typical patterns of **Sustainable energy**.

Duck Strip 4.1

Radiant panels

The new **Sabiana Duck Strip 4.1** radiant panel represents the maximum evolution of hot water radiant ceiling heating systems.

Built in compliance with the European Standard EN 14037 at the Sabiana facilities in Corbetta (MI), **it is manufactured according to the National Industry 4.0 Plan**, with industrial automation that integrates some new production technologies that improve working conditions and increase the productivity and functional quality of the plants; all this with an eye on energy consumption, creating more efficient systems and reducing any waste of energy according to the typical paradigms of Sustainable energy.

Since 1971 Sabiana, world leader in the heating and air conditioning industry, has been designing, manufacturing and selling high temperature or hot water radiant panels installed in all types of environments (small, medium and large industry, sport, commercial, recreational and zootechnical facilities, etc.) and designed to ensure the **maximum possible comfort** combined with **high energy consumption savings**.

The high construction standards and the use of high quality raw materials guarantee a product designed to last over the years, without any functional problems and with unchanged thermal efficiency.
These characteristics have led Sabiana Duck Strip radiant panels to being chosen by the most important companies worldwide, those that consider each cost item as a **production investment.**

Sabiana has significantly expanded the range of radiant panel models available with the **introduction of two new versions**; the first one featuring 18 mm diameter pipes (with variable pitches of 75 mm or 100 mm) and the second one featuring 28 mm pipes (with 150 mm pitch), for a total of 18 different types.

Series DS-ST18

- **Radiant panel made of** 0.8 mm thick high quality **steel**.
- 18 mm diameter electro-welded steel **pipes** with smooth ends for joining with pressfittings.
- **Pipe/Plate connection** made by spot welding.
- **Pipe pitch** 100 mm (DS-ST18-3) or 75 mm (DS-ST18-4).
- Square section **headers** welded at the factory on the first and final sections.
- Possibility of **raised header**.
- **Angle brackets**.
- **Sheet metal retaining clips** for fastening the fibreglass insulation.
- Shaped and painted **make-up joints** for covering the junction area.
- **Protection** with a special phosphodegreasing process and epoxy-polyester powder coating, dried in a furnace at 180°C – RAL 9016 (white) or RAL 9002 (light grey), in compliance with Directive 76/769/EEC. Other RAL colours available on request.
- **Fibreglass insulation** available (supplied in bulk rolls) with 30 mm standard thickness, or 40 mm on request:
- **Emission** of the radiant surface ε = 0,96.

Serie DS-ST28

- **Radiant panel** made of 1.2 mm thick high quality **steel**.
- 28 mm diameter electro-welded steel **pipes** with smooth ends for joining with pressfittings.
- **Pipe/Plate connection** made by spot welding.
- **Version with special pipe** for high temperature hot water systems (DS-SP).
- **Pipe pitch** 150 mm.
- Square section **headers** welded at the factory on the first and final sections.
- Possibility of **raised header**.
- **Angle brackets**.
- **Sheet metal retaining clips** for fastening the fibreglass insulation.
- Shaped and painted **make-up joints** for covering the junction area.
- **Protection** with a special phosphodegreasing process and epoxy-polyester powder coating, dried in a furnace at 180°C – RAL 9016 (white) or RAL 9002 (light grey), in compliance with Directive 76/769/EEC. Other RAL colours available on request.
- **Fibreglass insulation** available (supplied in bulk rolls) with 30 mm standard thickness, or 40 mm on request:
- **Emission** of the radiant surface ε = 0,96.

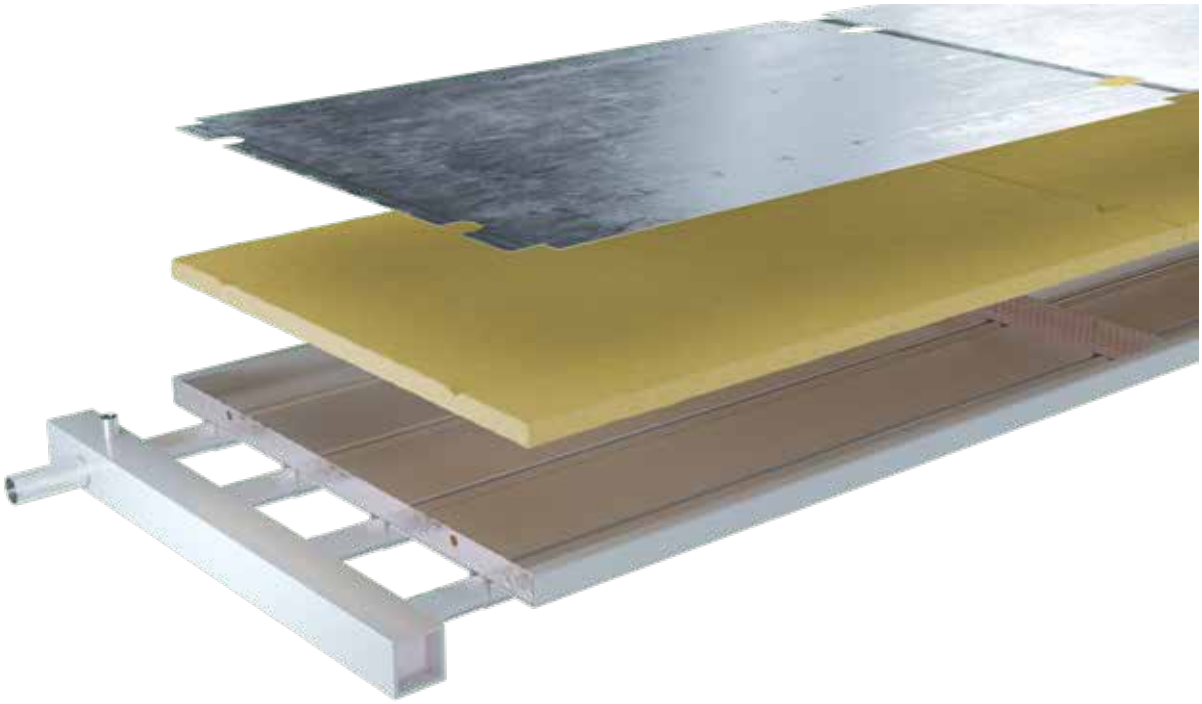
FIBREGLASS INSULATION

Fibreglass insulation available (supplied in bulk rolls) with 30 mm standard thickness, with 25 micron aluminium sheet support.

Reaction to fire class
Class: A1 according to Standard EN 13501-1.

Technical characteristics
The totally inorganic nature of the fibreglass ensures a long lasting thermal efficiency, prevention from parasites and rodents, no hygroscopicity and makes be rotproof.

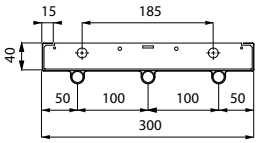
Thickness	30 mm	40 mm
Thermal conductivity in compliance with EN14303	0,036 W/mK	0,034 W/mK
Density	20 kg/m^3	25 kg/m^3
Thermal resistance	0,83 m^{2}K/W	1,17 m^{2}K/W



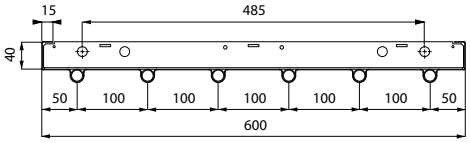
DS-ST18 range

Pipes 18 mm Ø, **100** mm pitch

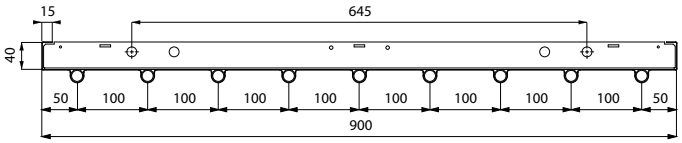
DS-ST18-3-030; 3 PIPES



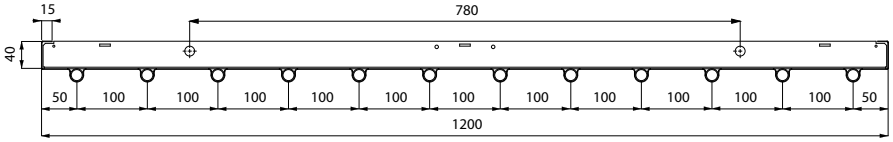
DS-ST18-3-060; 6 PIPES



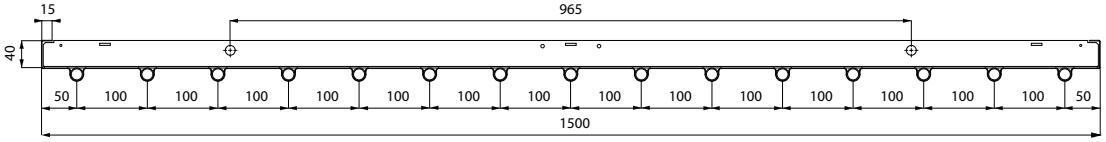
DS-ST18-3-090; 9 PIPES



DS-ST18-3-120; 12 PIPES

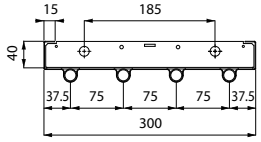


DS-ST18-3-150; 15 PIPES

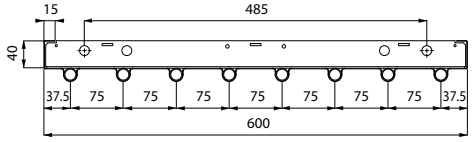


Pipes 18 mm Ø, **75** mm pitch

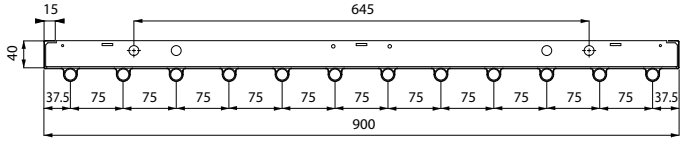
DS-ST18-4-030; 4 PIPES



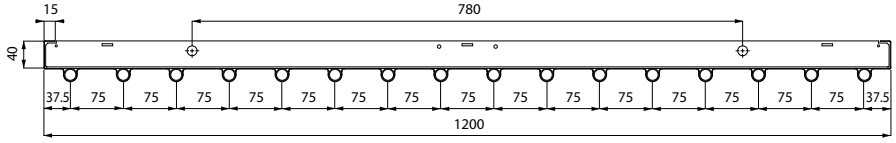
DS-ST18-4-060; 8 PIPES



DS-ST18-4-090; 12 PIPES



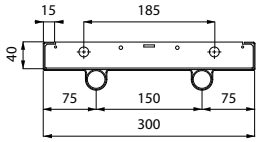
DS-ST18-4-120; 16 PIPES



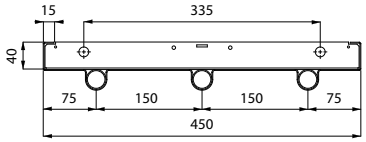
DS-ST28 range

Pipes 28 mm Ø, **150** mm pitch

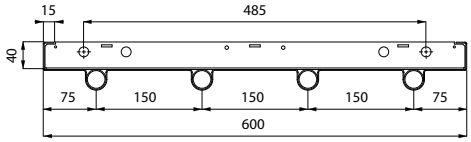
DS-ST28-2-030; 2 PIPES



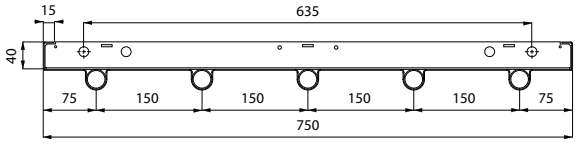
DS-ST28-2-045; 3 PIPES



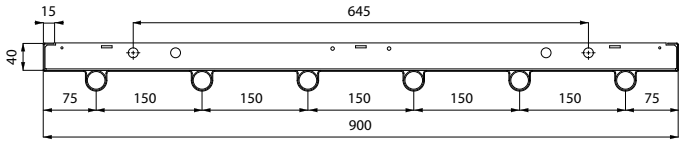
DS-ST28-2-060; 4 PIPES



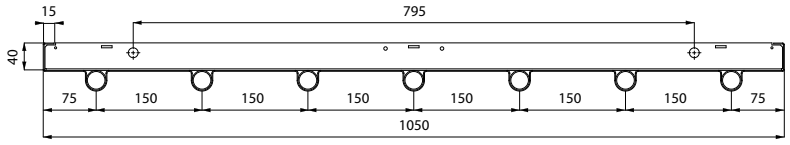
DS-ST28-2-075; 5 PIPES



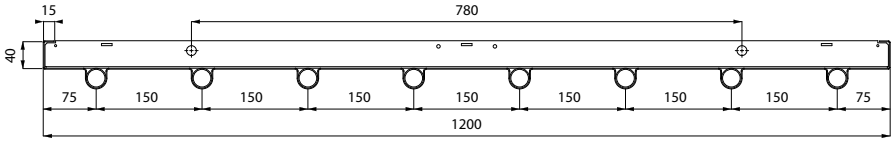
DS-ST28-2-090; 6 PIPES



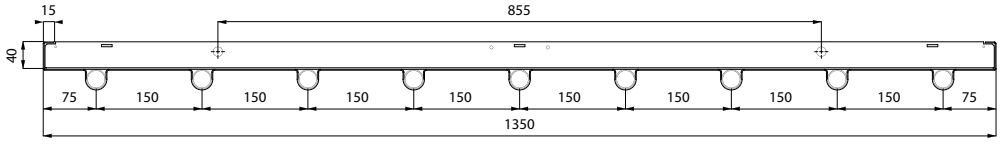
DS-ST28-2-105; 7 PIPES



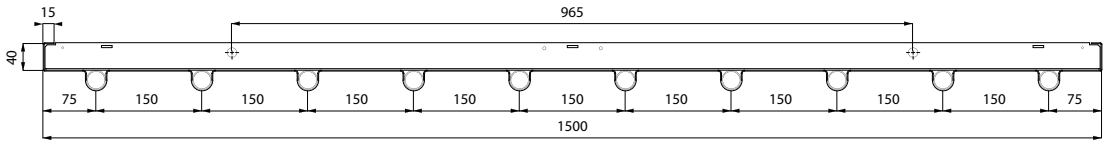
DS-ST28-2-120; 8 PIPES



DS-ST28-2-135; 9 PIPES

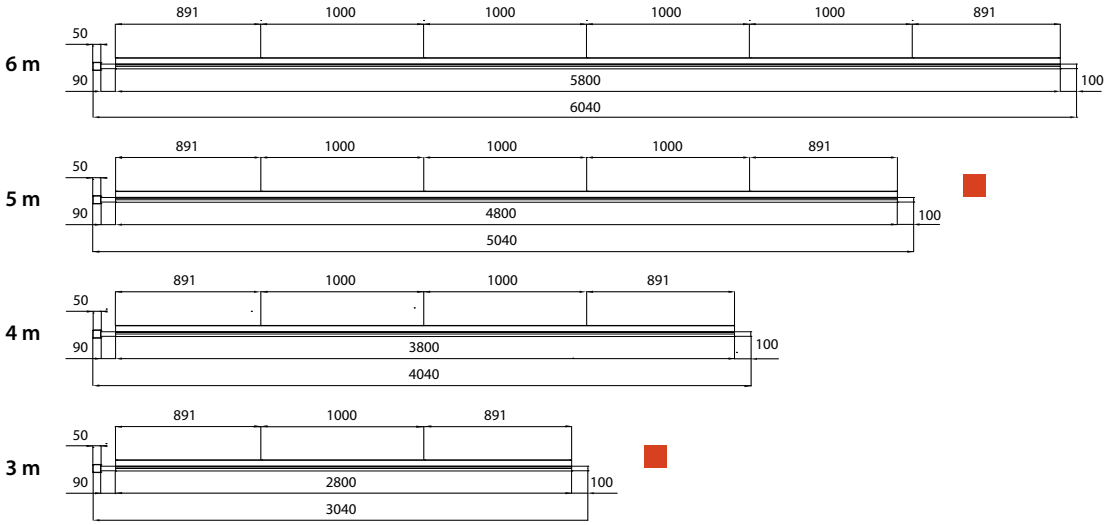


DS-ST28-2-150; 10 PIPES

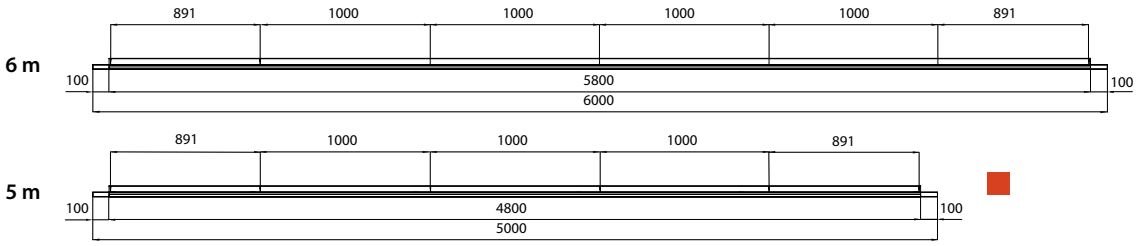


Modular lengths and hanging bracket pitches

Start and final head



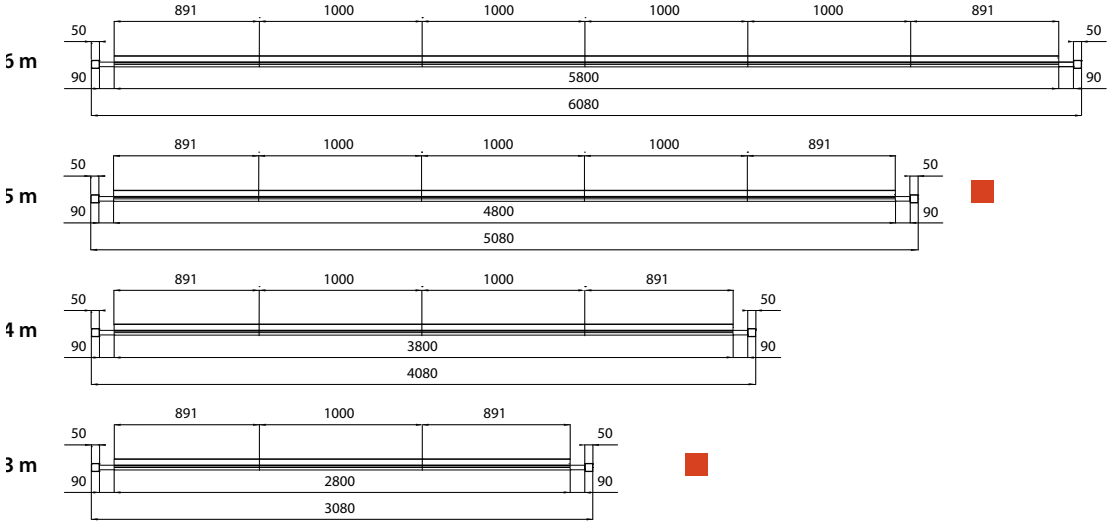
Intermediate



Special version on request

Modular lengths and hanging bracket pitches

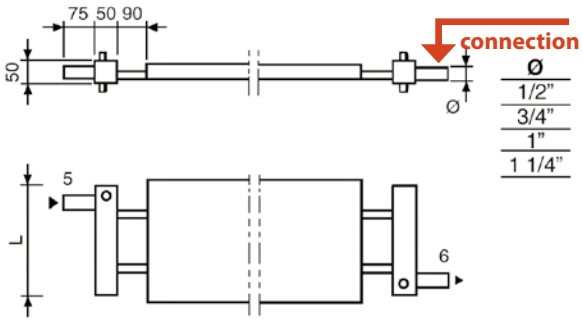
Double heads



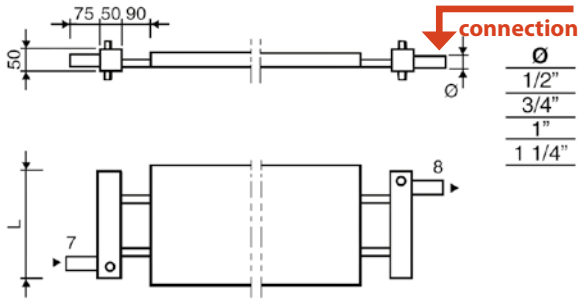
Special version on request

B Model

5-6 connections

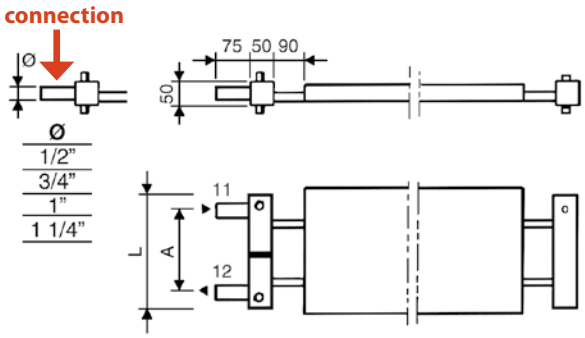


7-8 connections

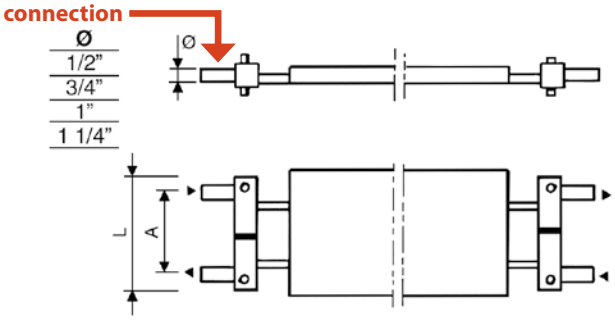


Model	030	045	060	075	090	105	120	135	150
L	300	450	600	750	900	1050	1200	1350	1500

D Model



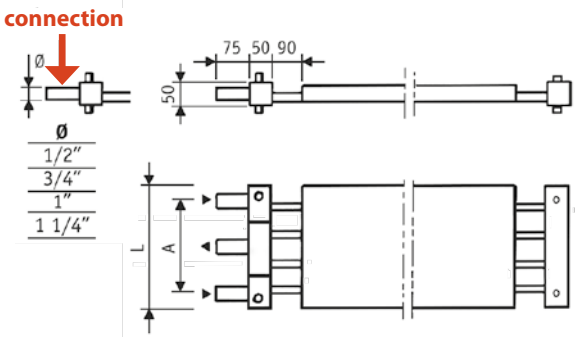
D+D Model



Model	030	045	060	075	090	105	120	135	150
L	300	450	600	750	900	1050	1200	1350	1500
A	200	350	500	650	800	950	1100	1250	1400

D and D+D headers are not suitable for high temperature hot water.
"D" header can be used with hot water up to lines with a maximum length of 50 and using slow and soft opening valves.

G Model



Model	120	135	150
L	1200	1350	1500
A	1100	1250	1400

NOMINAL WATER WEIGHTS AND CONTENTS

Model		Radiant panel				Header		
		Weight kg/m		Water content l/m		Weight kg		Water content l
standard	special	standard	special	standard	special	empty	with water	
DS-ST18-3-030	-	4	-	0,57	-	1,00	1,64	0,64
DS-ST18-3-060	-	8	-	1,15	-	2,00	3,33	1,33
DS-ST18-3-090	-	12	-	1,72	-	2,90	4,92	2,02
DS-ST18-3-120	-	16	-	2,29	-	3,80	6,51	2,71
DS-ST18-3-150	-	19	-	2,87	-	4,70	8,10	3,40
DS-ST18-4-030	-	5	-	0,77	-	1,00	1,64	0,64
DS-ST18-4-060	-	9	-	1,53	-	2,00	3,33	1,33
DS-ST18-4-090	-	14	-	2,29	-	2,90	4,92	2,02
DS-ST18-4-120	-	18	-	3,06	-	3,80	6,51	2,71
DS-ST28-2-030	**DS-SP28-2-030**	6	6,60	0,98	0,91	1,0	1,64	0,64
DS-ST28-2-045	**DS-SP28-2-045**	9	9,90	1,47	1,36	1,5	2,49	0,99
DS-ST28-2-060	**DS-SP28-2-060**	11	12,20	1,96	1,81	2,0	3,33	1,33
DS-ST28-2-075	**DS-SP28-2-075**	14	15,50	2,45	2,26	2,4	4,08	1,68
DS-ST28-2-090	**DS-SP28-2-090**	16	17,80	2,95	2,71	2,9	4,92	2,02
DS-ST28-2-105	**DS-SP28-2-105**	19	21,10	3,44	3,17	3,3	5,67	2,37
DS-ST28-2-120	**DS-SP28-2-120**	22	24,40	3,93	3,62	3,8	6,51	2,71
DS-ST28-2-135	**DS-SP28-2-135**	24	26,70	4,42	4,07	4,3	7,36	3,06
DS-ST28-2-150	**DS-SP28-2-150**	27	30,00	4,91	4,52	4,7	8,10	3,40

Duck Strip 4.1 | THERMAL EMISSIONS OF DS-ST18 RADIANT PANELS

Thermal emissions for each meter according to European Standard EN 14037-3

	18-3-030	18-3-060	18-3-090	18-3-120	18-3-150	18-4-030	18-4-060	18-4-090	18-4-120
K	1,933	3,247	4,448	5,731	7,173	2,075	3,354	4,569	5,852
n	1,159	1,157	1,173	1,169	1,164	1,161	1,175	1,182	1,182
Δtm (K)	W/m	W/m	W/m	W/m	W/m	W/m	W/m	W/m	W/m
20	62	104	149	190	234	67	113	158	202
22	70	116	167	213	262	75	127	176	226
24	77	128	185	235	290	83	140	196	250
26	84	141	203	258	318	91	154	215	275
28	92	153	222	282	347	99	168	235	301
30	100	166	240	305	376	108	182	255	326
32	107	179	259	329	405	116	197	275	352
34	115	192	278	354	435	124	211	295	378
36	123	205	298	378	465	133	226	316	404
38	131	218	317	403	495	142	241	337	431
40	139	232	337	428	525	150	256	358	458
42	147	245	357	453	556	159	271	379	485
44	155	259	377	478	587	168	286	400	513
46	163	272	397	503	618	177	302	422	540
48	172	286	417	529	650	186	317	444	568
50	180	300	438	555	681	195	333	466	596
52	188	314	458	581	713	204	348	488	625
54	197	328	479	607	745	213	364	510	653
55	201	335	489	620	761	218	372	521	667
56	205	342	500	634	777	222	380	532	682
58	214	356	521	660	810	231	396	555	711
60	222	371	542	687	842	241	412	578	740
62	231	385	563	714	875	250	428	600	769
64	240	399	585	741	908	259	444	623	798
65	244	406	595	754	925	264	453	635	813
66	248	414	606	768	941	269	461	646	828
68	257	428	628	795	974	278	477	670	858
70	266	443	649	823	1008	288	494	693	888
72	275	458	671	850	1041	297	510	716	918
74	284	472	693	878	1075	307	527	740	948
76	292	487	715	906	1109	317	544	764	978
78	301	502	737	933	1143	326	561	788	1009
80	310	517	759	961	1177	336	578	811	1039
82	319	532	782	990	1212	346	595	836	1070
84	328	547	804	1018	1246	356	612	860	1101
86	338	562	827	1046	1281	366	629	884	1132
88	347	577	849	1075	1315	375	646	908	1163
90	356	592	872	1103	1350	385	663	933	1195
92	365	608	895	1132	1385	395	681	957	1226
94	374	623	918	1161	1420	405	698	982	1258
96	383	638	941	1190	1456	415	716	1007	1289
98	393	654	964	1219	1491	425	733	1031	1321
100	402	669	987	1248	1527	436	751	1056	1353

Δtm (K) = difference between the mean water temperature and the room temperature

K = coefficient related to the heating body

n = = exponent related to the heating body

The thermal emissions are calculated according to the following fomula: $Q = K (\Delta tm)^n$

The tests have been carried out by Kermi GmbH laboratory in Plattling, Germany

THERMAL EMISSIONS OF DS-ST18 PRESSFITTINGS

Thermal emissions for a couple of headers according to European Standard EN 14037-3

	18-3-030	18-3-060	18-3-090	18-3-120	18-3-150	18-4-030	18-4-060	18-4-090	18-4-120
K	0,393	0,779	1,177	1,582	1,962	0,435	0,861	1,305	1,757
n	1,216	1,216	1,216	1,216	1,216	1,235	1,235	1,235	1,235
Δtm (K)	W	W	W	W	W	W	W	W	W
20	30	60	90	121	150	35	70	106	142
22	34	67	101	136	168	40	78	119	160
24	37	74	112	151	187	44	87	132	178
26	41	82	124	166	206	49	96	146	196
28	45	90	135	182	226	53	106	160	215
30	49	97	147	198	245	58	115	174	234
32	53	105	159	214	265	63	124	189	254
34	57	113	171	230	286	68	134	203	274
36	61	122	184	247	306	73	144	218	294
38	66	130	196	264	327	78	154	233	314
40	70	138	209	281	348	83	164	248	334
42	74	147	222	298	369	88	174	264	355
44	78	155	235	315	391	93	184	279	376
46	83	164	248	333	413	98	195	295	397
48	87	173	261	350	435	104	205	311	419
50	91	181	274	368	457	109	216	327	441
52	96	190	287	386	479	114	227	343	462
54	100	199	301	404	502	120	237	360	485
55	103	204	308	414	513	123	243	368	496
56	105	208	314	423	524	125	248	376	507
58	110	217	328	441	547	131	259	393	529
60	114	226	342	460	570	137	270	410	552
62	119	236	356	478	593	142	282	427	575
64	124	245	370	497	617	148	293	444	598
65	126	249	377	507	628	151	299	452	609
66	128	254	384	516	640	154	304	461	621
68	133	264	398	535	664	159	316	478	644
70	138	273	413	554	688	165	327	496	668
72	143	283	427	574	712	171	339	513	691
74	147	292	441	593	736	177	350	531	715
76	152	302	456	613	760	183	362	549	739
78	157	311	471	632	784	189	374	567	763
80	162	321	485	652	809	195	386	585	787
82	167	331	500	672	834	201	398	603	812
84	172	341	515	692	858	207	410	621	836
86	177	351	530	712	883	213	422	639	861
88	182	361	545	732	908	219	434	658	886
90	187	371	560	753	933	225	446	676	911
92	192	381	575	773	959	232	458	695	936
94	197	391	590	794	984	238	471	714	961
96	202	401	606	814	1010	244	483	732	986
98	207	411	621	835	1035	250	496	751	1012
100	213	421	637	856	1061	257	508	770	1037

Δtm (K) = difference between the mean water temperature and the room temperature

K = coefficient related to the heating body

n = = exponent related to the heating body

The thermal emissions are calculated according to the following fomula: $Q = K (\Delta tm)^n$

The tests have been carried out by Kermi GmbH laboratory in Plattling, Germany

Duck Strip 4.1 | THERMAL EMISSIONS OF DS-ST28 RADIANT PANELS

Thermal emissions for each meter according to European Standard EN 14037-3

	28-2-030	28-2-045	28-2-060	28-2-075	28-2-090	28-2-105	28-2-120	28-2-135	28-2-150
K	1,794	2,514	3,090	3,938	4,750	5,137	5,838	6,472	7,075
n	1,165	1,156	1,165	1,162	1,155	1,169	1,17	1,17	1,17
Δtm (K)	W/m	W/m	W/m	W/m	W/m	W/m	W/m	W/m	W/m
20	59	80	101	128	151	170	194	215	235
22	66	90	113	143	169	191	217	241	263
24	73	99	125	158	187	211	240	267	291
26	80	109	138	174	205	232	264	293	320
28	87	118	150	189	223	253	288	319	349
30	94	128	162	205	241	274	312	346	378
32	102	138	175	221	260	295	337	373	408
34	109	148	188	237	279	317	361	401	438
36	117	158	201	253	298	339	386	428	468
38	124	168	214	270	317	361	412	456	499
40	132	179	227	286	337	383	437	485	530
42	140	189	240	303	356	406	463	513	561
44	147	200	254	320	376	428	489	542	592
46	155	210	267	337	396	451	515	571	624
48	163	221	281	354	415	474	541	600	656
50	171	231	295	371	436	498	568	629	688
52	179	242	308	388	456	521	594	659	720
54	187	253	322	406	476	544	621	689	753
55	191	258	329	415	486	556	635	703	769
56	195	264	336	423	496	568	648	718	785
58	203	275	350	441	517	592	675	749	818
60	212	286	364	459	538	616	703	779	851
62	220	297	379	476	558	640	730	809	885
64	228	308	393	494	579	664	758	840	918
65	232	313	400	503	590	676	772	855	935
66	236	319	407	512	600	688	785	871	952
68	245	330	422	530	621	713	813	902	986
70	253	341	436	549	642	737	841	933	1020
72	262	353	451	567	664	762	870	964	1054
74	270	364	465	585	685	787	898	995	1088
76	279	375	480	604	706	812	926	1027	1123
78	287	387	495	622	728	837	955	1059	1157
80	296	398	509	641	749	862	984	1091	1192
82	304	410	524	659	771	887	1013	1123	1227
84	313	422	539	678	793	912	1042	1155	1262
86	322	433	554	697	815	938	1071	1187	1297
88	330	445	569	716	837	963	1100	1219	1333
90	339	457	584	735	859	989	1129	1252	1368
92	348	468	599	754	881	1015	1158	1284	1404
94	357	480	615	773	903	1041	1188	1317	1440
96	366	492	630	792	925	1067	1218	1350	1476
98	375	504	645	811	947	1093	1247	1383	1512
100	384	516	661	830	970	1119	1277	1416	1548

Δtm (K) = difference between the mean water temperature and the room temperature

K = coefficient related to the heating body

n = = exponent related to the heating body

The thermal emissions are calculated according to the following fomula: $Q = K (\Delta tm)^n$

The tests have been carried out by Kermi GmbH laboratory in Plattling, Germany

THERMAL EMISSIONS OF DS-ST28 RADIANT PANELS

Thermal emissions of a couple of headers according to European Standard EN 14037-3

	28-2-030	28-2-045	28-2-060	28-2-075	28-2-090	28-2-105	28-2-120	28-2-135	28-2-150
K	0,377	0,567	0,747	0,944	1,132	1,320	1,526	1,698	1,887
n	1,257	1,257	1,257	1,257	1,257	1,257	1,257	1,257	1,257
Δtm (K)	W	W	W	W	W	W	W	W	W
20	33	49	65	82	98	114	132	147	163
22	37	55	73	92	110	129	149	165	184
24	41	62	81	103	123	143	166	184	205
26	45	68	90	113	136	159	183	204	227
28	50	75	98	124	149	174	201	224	249
30	54	82	107	136	163	190	219	244	271
32	59	88	116	147	177	206	238	265	294
34	63	95	126	159	191	222	257	286	318
36	68	103	135	171	205	239	276	307	341
38	73	110	145	183	219	256	295	329	365
40	78	117	154	195	234	273	315	351	390
42	83	124	164	207	248	290	335	373	414
44	88	132	174	220	263	307	355	395	439
46	93	140	184	232	279	325	376	418	464
48	98	147	194	245	294	343	396	441	490
50	103	155	204	258	309	361	417	464	516
52	108	163	214	271	325	379	438	488	542
54	113	171	225	284	341	397	459	511	568
55	116	175	230	291	349	407	470	523	581
56	119	179	235	297	357	416	481	535	595
58	124	187	246	311	373	435	503	559	621
60	130	195	257	324	389	454	524	584	649
62	135	203	268	338	405	473	547	608	676
64	141	211	278	352	422	492	569	633	703
65	143	215	284	359	430	502	580	645	717
66	146	220	289	366	439	511	591	658	731
68	152	228	300	380	455	531	614	683	759
70	157	237	312	394	472	551	637	708	787
72	163	245	323	408	489	571	660	734	816
74	169	254	334	422	506	591	683	760	844
76	174	262	346	437	524	611	706	786	873
78	180	271	357	451	541	631	729	812	902
80	186	280	369	466	559	651	753	838	931
82	192	289	380	480	576	672	777	864	960
84	198	297	392	495	594	693	801	891	990
86	204	306	404	510	612	713	825	918	1020
88	210	315	415	525	630	734	849	944	1050
90	216	324	427	540	648	755	873	972	1080
92	222	333	439	555	666	776	898	999	1110
94	228	343	451	570	684	798	922	1026	1140
96	234	352	464	586	702	819	947	1054	1171
98	240	361	476	601	721	841	972	1081	1202
100	246	370	488	617	739	862	997	1109	1233

Δtm (K) = difference between the mean water temperature and the room temperature

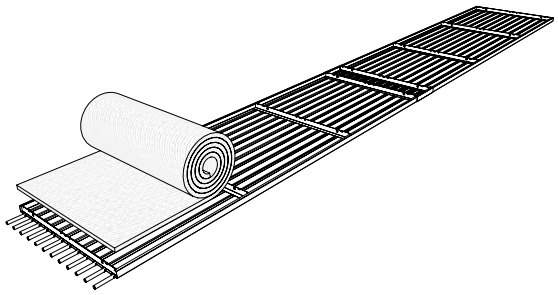
K = coefficient related to the heating body

n = = exponent related to the heating body

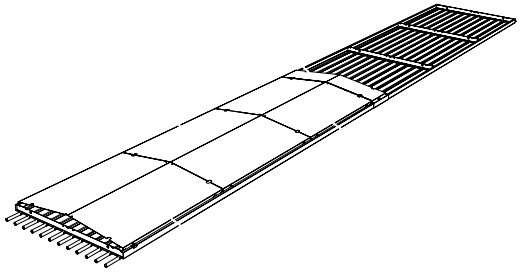
The thermal emissions are calculated according to the following fomula: $Q = K (\Delta tm)^n$

The tests have been carried out by Kermi GmbH laboratory in Plattling, Germany

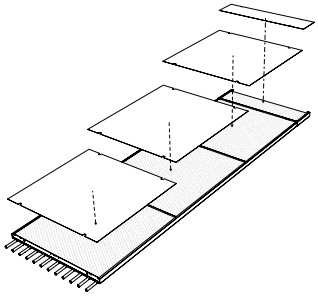
Fibreglass insulation



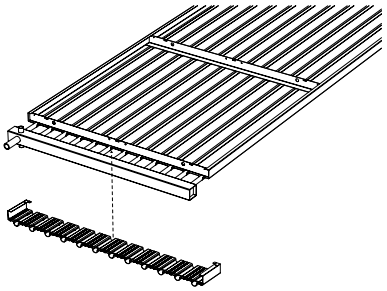
Upper cover panel for gyms



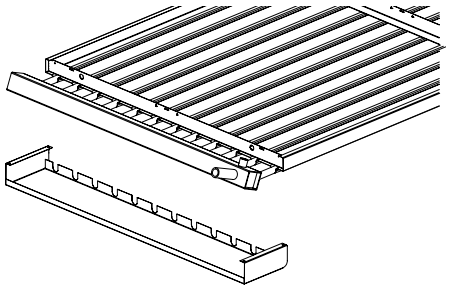
Cover panel



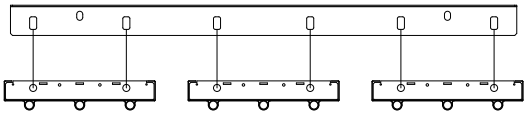
Make-up joint between panel and header



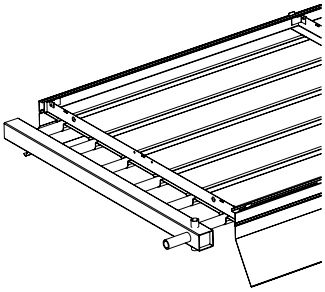
Cover panel with raised header



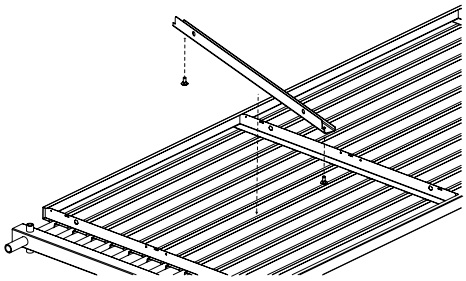
Hanging bracket for hanging multiple panels



Anti-convective side skirt



Hanging bracket (sliding)



Pulsar

Radiant Panel

The **Pulsar Sabiana** with INOX tube, ceiling mounted radiant panels are produced in 4 sizes, with a width of 600 mm and a length between 1,2 m and 3 m, in 2 standard colours, and others upon request. The panel has a very elegant design, perfectly matching the false ceiling (it is also available in a free hanging version identified by the letter "W"), features simple maintenance, very long life and can be connected in series or in parallel to others panels using flexible pipes supplied upon request.

The panels feature a very interesting construction: modern welding units, without leaving any visible traces, press the steel pipes into the thick electrogalvanised steel panel, guaranteeing an optimum heat output and a uniform temperature across the entire radiating surface. The product is ideal for many types of environment, especially schools and hospitals.

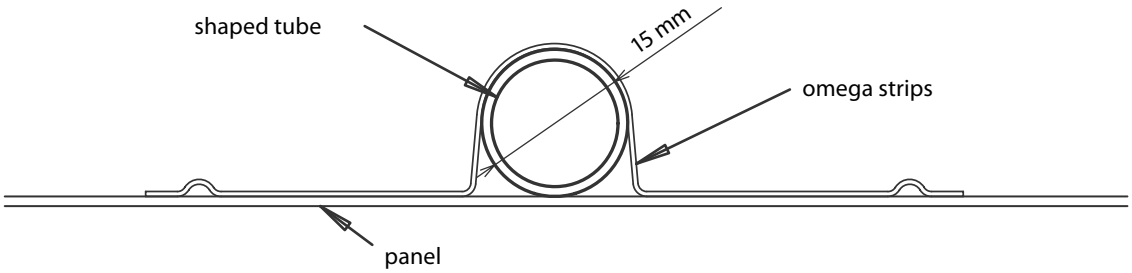
The panel can be supplied with hot or cold water: in summer, it should be used together with a primary air system, as only sensible cooling is provided.

The heating capacity values have been certified by the leading European laboratory in the sector (University of Stuttgart), applying the European EN 14037 standard.

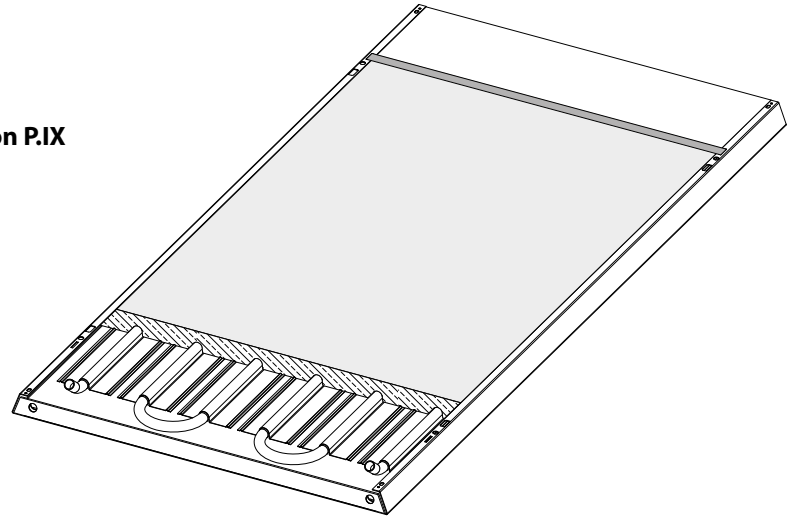
The painting process, using an epoxypolyester resin powder coat dried in a furnace at 180 °C, ensures high resistance over time, in compliance with the international standard ISO 2409, certified by tests performed at the Milan Polytechnic University.

- **The radiant panels are supplied in four sizes**, which can be perfectly integrated into any false ceiling.
- Indeed, **the lengths of 1,20, 1,80, 2,40 and 3,00 m** ensure optimum integration into 600 x 600 mm modular ceilings, the standard dimension for false ceiling panels in Europe.
- **The visible side is perfectly flat**, meaning that the Pulsar radiant panels can match all types of false ceiling panels available on the market.
- **As standard, the panels are supplied in the colour RAL 9016**, with a matt finish created by an epoxy-polyester coat dried in a furnace at 180 °C.
- **Other RAL colours are also available** for the architect to choose from.
- The radiant panels are made of a **radiating galvanized steel plate**, 1 mm thick.
- On the panel is fixed a 0,8 mm thick INOX tube **with 15 mm of external diameter** suitably shaped to optimize surface contact.
- **The galvanized omega strips** welded to the panels hold the correct spacing of the tubes and secure the best surface contact between the tube and the panel.
- **The dimensional tolerances of the panels** are in accordance with standard EN 14037-1 (radiant panel length ± 3,00 mm, radiant panel width ± 2,00 mm).
- **The paint complies** with the **European Standard 76/769/EEC**.
- **Fire reaction** class: A1.
- **Emission** of the radiant surface $\varepsilon = 0{,}96$.
- The radiant panels are supplied with an **insulating layer of mineral wool** (30 mm thick) protected by an aluminium sheet (25 micron thick) to be mounted on the top of the panel.
- **The insulation is in Class A1** according to EN 13501-1 standard.
- **Thermal conductivity 0,037 W/mK**.
- **Density** 14 kg/m^3.
- **Thermal resistance** 0,81 m^{2}K/W.

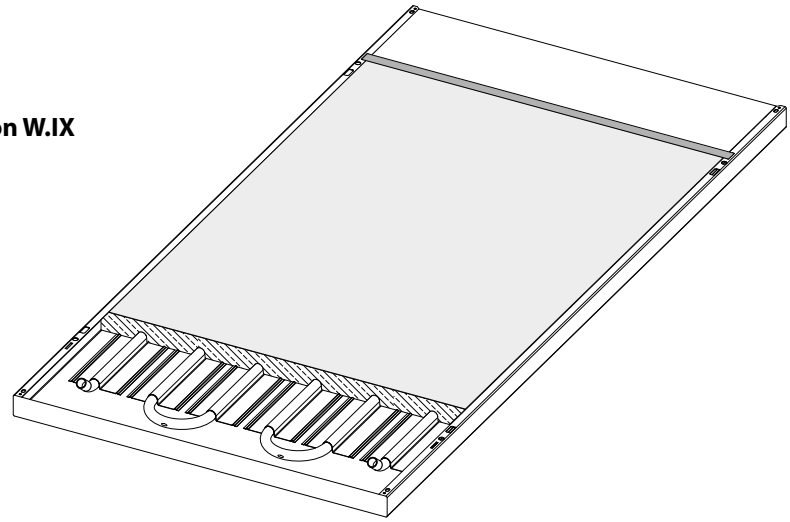
Typical section



Version P.IX



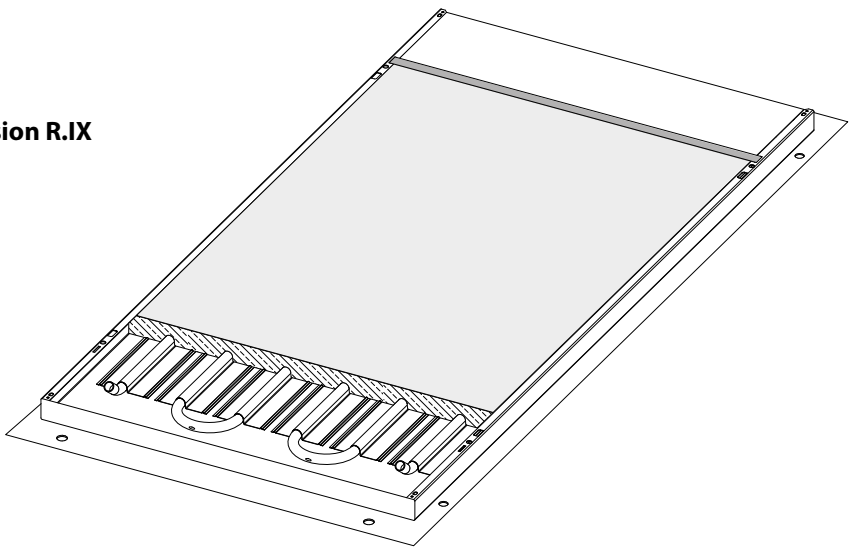
Version W.IX



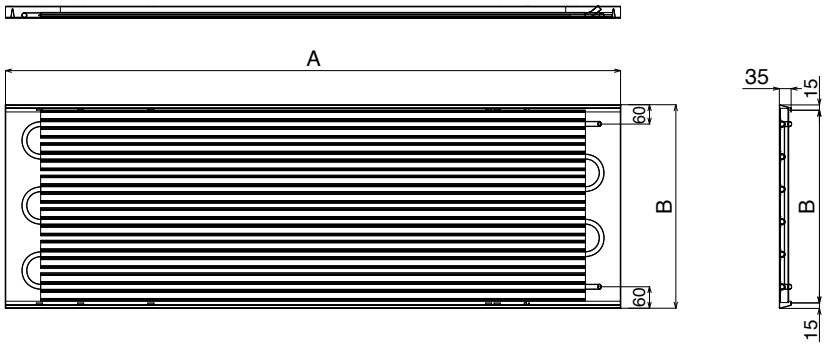
Insulation, 30 mm thick
(supplied not mounted)

Insulation holding strip

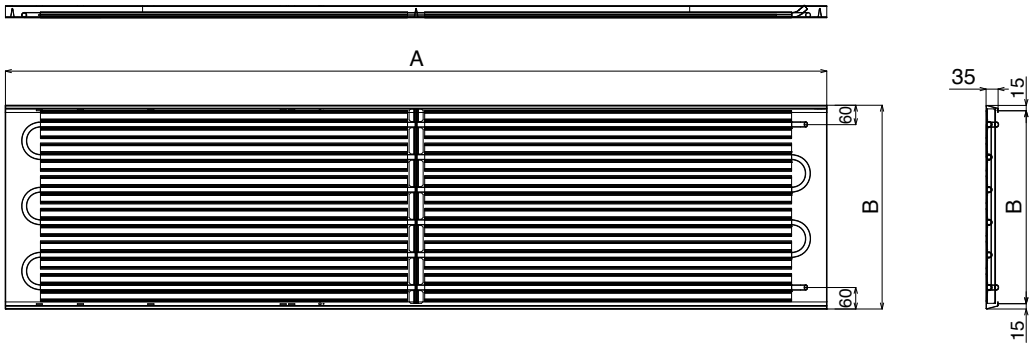
Version R.IX



Example model P.IX 1 and P.IX 2



Example model P.IX 3 and P.IX 4



IX version with INOX tube

Model	Length (A) mm	Width (B) mm	Weight kg	Water content litres
P.IX 1	1195	595	12,9	1,0
P.IX 2	1795	595	19,4	1,5
P.IX 3	2395	595	25,8	2,0
P.IX 4	2995	595	32,3	2,5
W.IX 1	1234	610	12,9	1,0
W.IX 2	1858	610	19,4	1,5
W.IX 3	2482	610	25,8	2,0
W.IX 4	3106	610	32,3	2,5

Thermal emissions in accordance with the European Standard EN 14037–1

Δtm °C	Emission W/ml	Δtm °C	Emission W/ml	Δtm °C	Emission W/ml	Δtm °C	Emission W/ml	Δtm °C	Emission W/ml
89	582	**75**	478	**61**	376	**47**	279	**33**	185
88	574	**74**	470	**60**	369	**46**	272	**32**	179
87	567	**73**	463	**59**	362	**45**	265	**31**	172
86	559	**72**	456	**58**	355	**44**	258	**30**	166
85	552	**71**	448	**57**	348	**43**	251	**29**	160
84	544	**70**	441	**56**	341	**42**	245	**28**	153
83	537	**69**	434	**55**	334	**41**	238	**27**	147
82	529	**68**	427	**54**	327	**40**	231	**26**	141
81	522	**67**	419	**53**	320	**39**	225	**25**	134
80	515	**66**	412	**52**	313	**38**	218	**24**	128
79	507	**65**	405	**51**	306	**37**	211	**23**	122
78	500	**64**	398	**50**	299	**36**	205	**22**	116
77	492	**63**	391	**49**	292	**35**	198	**21**	110
76	485	**62**	383	**48**	285	**34**	192	**20**	104

Cooling emissions in accordance with the European Standard EN 14037–4

Δtm °C	Cooling emission			
	with insulation		without insulation	
	W/ml	W/m²	W/ml	W/m²
5	24	40	33	56
6	29	49	40	68
7	35	58	48	80
8	40	68	55	92
9	46	77	62	105
10	52	87	70	118
11	57	96	78	130
12	63	106	85	143
13	69	116	93	156
14	75	126	101	169
15	81	136	108	182

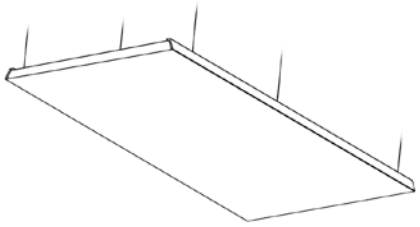
Δtm = difference between the average water temperature and the room temperature.

Pressfittings
(Geberit)

Screw fittings
(Caleffi)

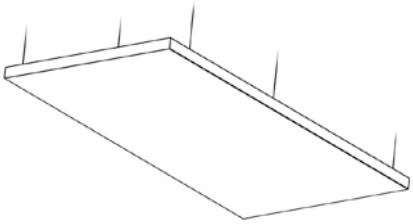
Non-active aesthetic panel "P" type
(installed within false ceilings)

The aesthetic panels are used when the active panels do not need to be installed and when, for aesthetic reasons or local specifications, a non-active panel has to be installed to complete a strip. Can be cut to measure on site.

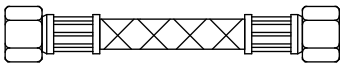


Non-active aesthetic panel "W" type
(not installed within false ceilings)

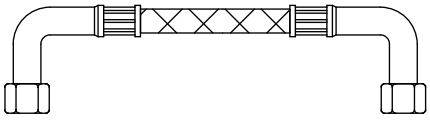
The aesthetic panels are used when the active panels do not need to be installed and when, for aesthetic reasons or local specifications, a non-active panel has to be installed to complete a strip. Can be cut to measure on site.



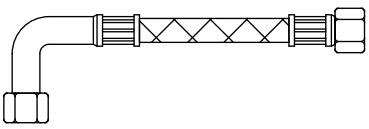
Straight flexible pipe
1/2" female fittings.



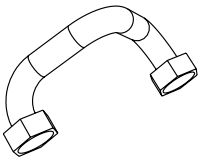
90° flexible pipe
1/2" female fittings



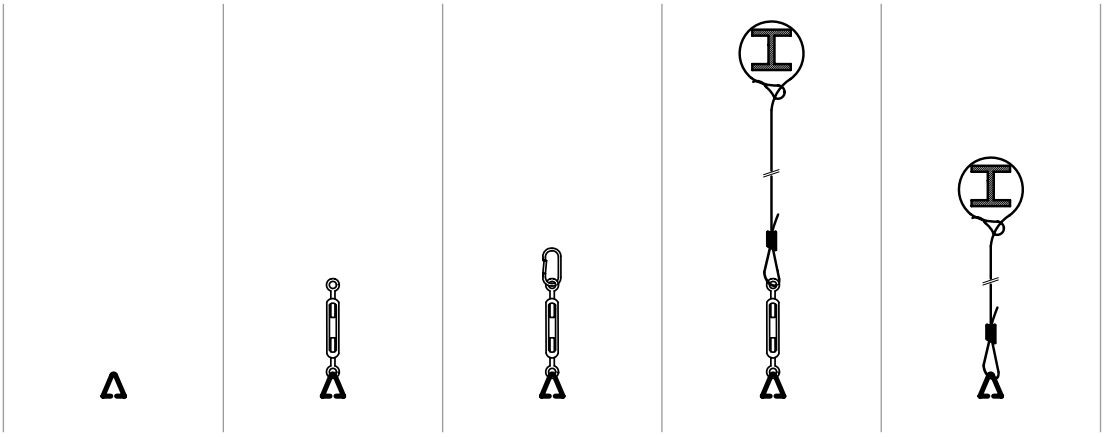
90° / Straight flexible pipe
1/2" female fittings

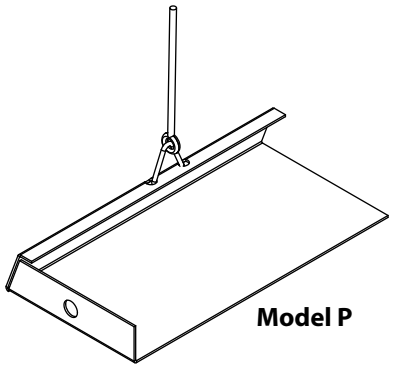


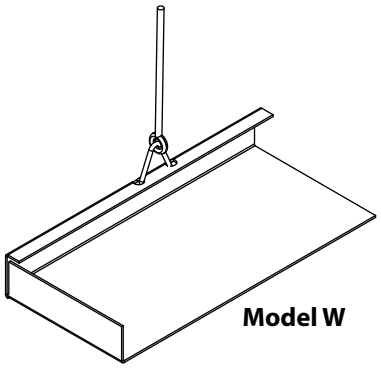
PS/WS pipe fitting
Copper pipe - 1/2" female fittings"



Hanging systems







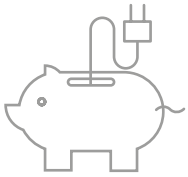
Unit heaters

Since 1950 Sabiana has been manufacturing **hot water, superheated water and steam air heaters** for heating industrial and commercial work environments, with proprietary manufacturing technology and a wide range of solutions.

Both in Germany and Italy, the countries where the European manufacturing industry is most developed, above all regarding machinery, the most common heating system for industrial environments uses hot water air heaters connected to a central heating system. The **excellent ratio of indoor comfort to system cost**, continual improvements in efficiency of hot water production, using both condensing boilers and heat pumps, the use of specific solutions such as flow optimisers on the terminal units, as well as **flexible installation** and easy adaptation to new production plant layouts even after installation, mean that still today thousands of designers and businesses propose and adopt this heating solution.

Following increased demand for **low-cost cooling in summer**, a new generation of air heaters fitted with coils designed for use with cold water, has joined the traditional series of hot water air heaters, with the result that **a complete range of solutions** can now be offered to meet all needs.

Sabiana is currently the leading Italian manufacturer of air heaters, and every day competes with its eternal German rivals, helping spread Italian know-how throughout Europe.



All range is compliant with the new Regulation (EU) No. 327/2011 which requires very low electric consumption ratings in relation to performances provided.

Atlas

Unit Heater

The **Atlas Sabiana** unit heaters have a big "heart": a coil, which has been developed, studied and constructed expressly for heating industrial environments. The increased thickness of the tubes (1 mm steel tube, 0,7 mm copper tube), their large diameter (Ø 22 mm) and the excellent ratio between the air flow and the output guarantee a long life and a high environmental comfort. The Atlas unit heaters are produced in 10 sizes from 5 to 120 kW and are available with a 1-row coil for steam and high temperature hot water installations, a 2-row coil for hot water installations and a 3-row coil for low temperature hot water installations.

The coil of Sabiana Atlas unit heaters with steel tubes Ø 22 mm and aluminium fins has the following advantages compared with the copper-aluminium small diameter tube coils: the material used for the steel tube, which is very thick (1 mm instead of 0,3 - 0,4 mm), makes the Sabiana coil extremely sturdy and long lasting. The tube's large diameter reduces the water pressure drop: this means that reduced power pumps are installed and a very rapid heating capacity is provided. The Sabiana coil for unit heaters uses a reduced number of tubes to give the same yield: this determines a low resistance to the air flow and consequently an optimum leaving air temperature and a very high throw. The greater spacing between the fins as well as their thickness facilitate cleaning and maintenance operations, which is essential to keep the unit heater efficient.

The steel tube coil is the ideal choice for plants where all tubes and equipment are made of steel because it avoids physical and chemical unbalance due to the interaction of different metals. The special painting coat makes the coil long lasting and increases the thermal output.

The Sabiana coil can be used with hot water, high temperature hot water or steam, even with a high working pressure. As a matter of fact each coil is submitted to two tests at 30 bars. However Sabiana, in order to meet any design and installation need, can offer a complete set of unit heaters with copper tubes and aluminium fins.

This coil has the same features (tube diameter, fin pitch, etc.) of the steel coil but it is built with copper tube 0,7 mm thick, of higher quality and with a total weight which is double compared with the coils normally used for unit heaters. The wide range of products includes 10 different sizes with 1, 2 or 3 rows each.

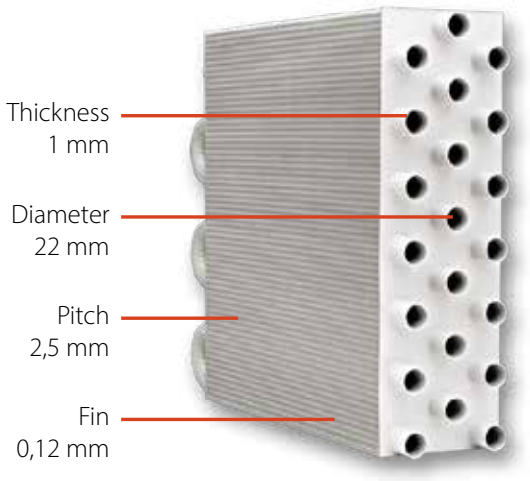
Upon request, sizes 1 to 6 are available with **the innovative electronic motors** with extremely low energy consumption, controlled by an inverter board and identified by ECM.
The ECM motors allow to decrease electric consumption compared to traditional asynchronous motors and they enable to adjust the air flow continuously and control the ambient temperature with precision, with further benefits in terms of very low noise levels.

- The **main casing** is manufactured from **galvanized prepainted steel** finished in a light grey colour (RAL 9002) and is assembled from three component parts.

- The **coil** is manufactured from the **highest quality steel or copper tube**. The fins are pressed from aluminium sheet, bonded onto the tubes facilitating the maximum transfer contact available.

- The **fan and motor assembly** is made up of three components: the fan, the motor and the safety guard, which also acts as the main support. The standard motor fitted is a hermetically sealed motor which is maintenance free. The motors are supplied as standard for a three phase 230/400V 50Hz supply, and they are available, according to the size, with 4/6 or 6/8 pole two speed (protection IP55) and with 4 or 6 pole one speed (protection IP44).

A **wide range** of air boxes and accessories is **available**.
On request: special voltages and special air boxes.

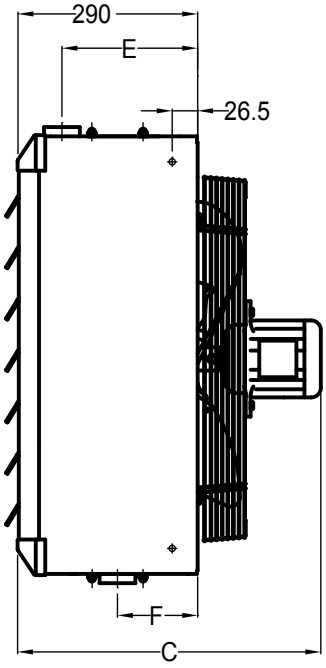


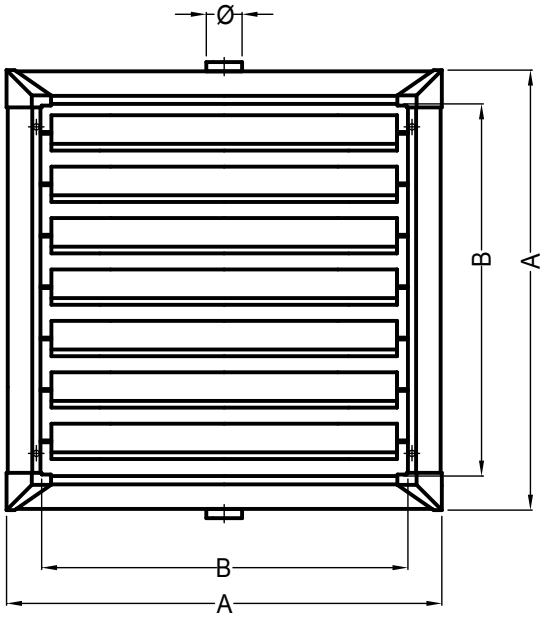
Atlas identification code

Reference: 46A42 SX

46	A	4	2	SX	SP
Motor 4/6 Pole (1350/1000 r.p.m.)	Range Atlas	Size 4	Rows 2	Coil steel tube	Coil copper tube

DIMENSIONS, WEIGHT, WATER CONTENT





Size	A	B	C (C-ATEX)	D	E	F	ø
1	472	336	465 (595)	375	220	130	1 ¼"
2	526	390	465 (595)	429	220	130	1 ¼"
3	580	444	465 (595)	483	220	130	1 ¼"
4	634	498	488 (618)	537	220	130	1 ¼"
5	688	552	488 (618)	591	220	130	1 ¼"
6	742	606	513 (643)	645	220	130	1 ¼"
7	793	657	560 (740)	696	210	140	1 ½"
8	900	764	575 (755)	803	210	140	1 ½"
9	1010	874	595 (775)	913	210	140	1 ½"
10	1117	980	640 (820)	1020	210	140	2"

Size	Weight kg (ATEX)			Water content liters		
	1R	2R	3R	1R	2R	3R
1	19 (32)	22 (35)	24 (37)	1,3	2,6	3,9
2	22 (35)	25 (37)	27 (40)	1,6	3,2	4,8
3	26 (38)	30 (42)	33 (45)	1,9	3,8	5,7
4	30 (42)	34 (46)	38 (50)	2,3	4,6	6,9
5	33 (47)	40 (54)	44 (58)	3,0	6,0	9,0
6	38 (52)	46 (60)	51 (65)	3,5	7,0	10,5
7	46 (63)	55 (72)	61 (78)	4,3	8,2	12,3
8	55 (71)	66 (82)	73 (89)	5,8	11,1	16,6
9	65 (86)	79 (100)	88 (109)	7,6	14,5	21,8
10	79 (98)	95 (114)	106 (125)	9,6	18,2	27,3

4/6 pole models

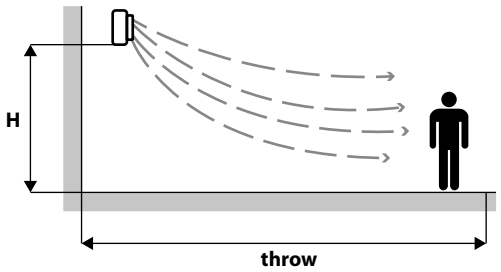
Water temperature 85-75°C
Drop 10°C - Δtm 65°C - Entering air temperature 15°C

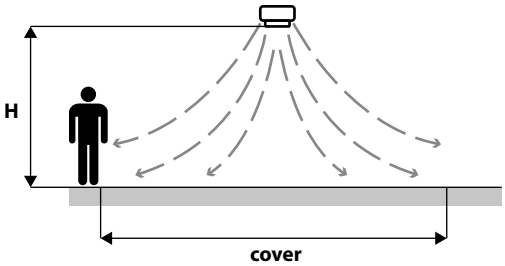
Size	Model	Motor speed r.p.m.		Air flow m^3/h		Noise level at 5 m * dB(A)		Emission kW		Leaving air temp. °C	
		Poles									
		4	6	4	6	4	6	4	6	4	6
1	**46A11**	1350	1000	1415	1055	56	50	–	–	–	–
	46A12	1350	1000	1340	990	56	50	10,24	8,79	37,4	41,0
	46A13	1350	1000	1195	885	56	50	11,39	9,62	42,9	46,8
2	**46A21**	1350	1000	2190	1680	59	53	–	–	–	–
	46A22	1350	1000	2010	1570	59	53	13,95	12,36	35,3	38,0
	46A23	1350	1000	1875	1420	59	53	17,52	15,07	42,4	46,0
3	**46A31**	1350	1000	3325	2510	61	55	–	–	–	–
	46A32	1350	1000	2915	2255	61	55	20,85	18,44	35,9	38,9
	46A33	1350	1000	2610	2040	61	55	25,68	22,41	43,8	47,1
4	**46A41**	1350	1000	4415	3305	64	57	–	–	–	–
	46A42	1350	1000	3725	2745	64	57	27,86	24,06	36,9	40,6
	46A43	1350	1000	3210	2390	64	57	32,03	27,14	44,2	48,2
5	**46A51**	1350	1000	5770	4250	66	59	–	–	–	–
	46A52	1350	1000	4800	3500	66	59	34,89	29,94	36,3	40,0
	46A53	1350	1000	4325	3110	66	59	43,06	35,90	44,1	48,8
6	**46A61**	1350	1000	6590	5065	69	62	–	–	–	–
	46A62	1350	1000	5515	4160	69	62	41,76	36,36	37,2	40,6
	46A63	1350	1000	4900	3620	69	62	50,96	42,98	45,4	49,7

***** The sound pressure levels dB(A) are measured at a distance of 5 m, directional factor Q = 2, compliant with the EN 3744 standard.

Size	Poles	Mounting heights			
		horizontal discharge		vertical discharge	
		height m	**throw** m	**height** max m	**cover** m^2
1	4	2,5÷3,5	7,5	3,5	50
	6	2,5÷3	5	3	36
2	4	3÷4	10	4	60
	6	2,5÷3,5	7	3,5	45
3	4	3÷4	13,5	5	70
	6	2,5÷3,5	10	4	50
4	4	3,5÷4,5	16	5,5	75
	6	3÷4	12	4,5	55
5	4	4÷5	18	6	90
	6	3,5÷4,5	13	5	70
6	4	4÷5,5	22	7	120
	6	4÷5	16	6	100

Mounting heights





6/8 pole models

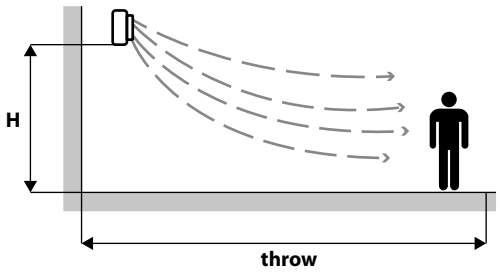
Water temperature 85-75°C
Drop 10°C - Δtm 65°C - Entering air temperature 15°C

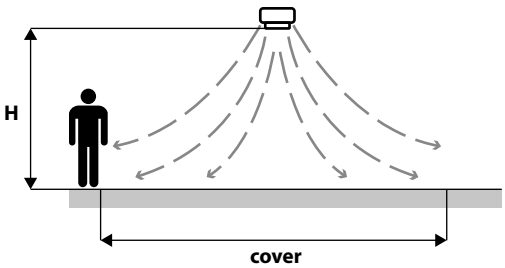
Size	Model	Motor speed r.p.m.		Air flow m^3/h		Noise level at 5 m * dB(A)		Emission kW		Leaving air temp. °C	
		Poles									
		6	8	6	8	6	8	6	8	6	8
1	68A11	900	750	970	860	48	44	–	–	–	–
	68A12	900	750	935	830	48	44	8,54	8,01	41,7	43,2
	68A13	900	750	835	740	48	44	9,29	8,65	47,5	49,2
2	68A21	900	750	1495	1170	50	46	–	–	–	–
	68A22	900	750	1410	1100	50	46	11,70	10,26	39,3	42,3
	68A23	900	750	1290	1025	50	46	14,23	12,41	47,3	50,4
3	68A31	900	750	2100	1620	52	48	–	–	–	–
	68A32	900	750	1880	1470	52	48	16,83	14,74	41,2	44,3
	68A33	900	750	1735	1320	52	48	20,39	17,28	49,4	53,3
4	68A41	900	750	2795	2195	54	50	–	–	–	–
	68A42	900	750	2345	1755	54	50	22,14	18,91	42,6	46,5
	68A43	900	750	2010	1535	54	50	24,47	20,70	50,6	54,4
5	68A51	900	750	3685	2865	56	51	–	–	–	–
	68A52	900	750	3050	2335	56	51	27,87	24,17	41,7	45,3
	68A53	900	750	2785	2100	56	51	33,58	27,27	50,3	54,4
6	68A61	900	750	4445	3550	59	54	–	–	–	–
	68A62	900	750	3710	2960	59	54	34,33	30,37	42,1	45,0
	68A63	900	750	3270	2610	59	54	40,43	35,19	51,2	54,4
7	68A71	900	750	5100	3960	65	59	–	–	–	–
	68A72	900	750	4800	3650	65	59	44,20	38,13	41,9	45,6
	68A73	900	750	4600	3500	65	59	52,35	44,50	48,3	52,2
8	68A81	900	750	7650	5400	67	61	–	–	–	–
	68A82	900	750	6900	4950	67	61	57,57	48,47	39,4	43,6
	68A83	900	750	6300	4500	67	61	70,23	57,52	47,6	52,4
9	68A91	900	750	10600	7600	68	62	–	–	–	–
	68A92	900	750	10200	7200	68	62	82,12	68,82	38,6	43,0
	68A93	900	750	9400	6400	68	62	101,49	81,06	46,6	52,1
10	68A101	900	750	12250	9215	71	65	–	–	–	–
	68A102	900	750	11800	8800	71	65	101,20	86,99	40,1	43,9
	68A103	900	750	11000	7950	71	65	124,93	102,93	48,2	52,9

* The sound pressure levels dB(A) are measured at a distance of 5m, directional factor Q = 2, compliant with the EN 3744 standard.

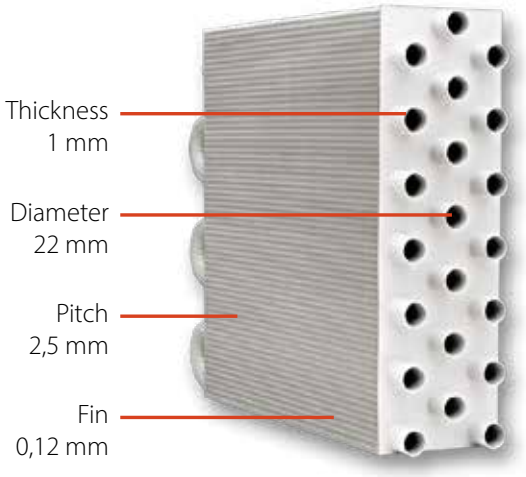
Size	Poles	Mounting heights			
		horizontal discharge		vertical discharge	
		height m	**throw** m	**height** max m	**cover** m^2
1	6	2,5÷3	5	3	36
	8	2,5÷3	4,5	–	–
2	6	2,5÷3,5	7	3,5	45
	8	2,5÷3,5	5,5	–	–
3	6	2,5÷3,5	10	4	50
	8	2,5÷3,5	7	–	–
4	6	3÷4	12	4,5	55
	8	3÷4	8	–	–
5	6	3,5÷4,5	13	5	70
	8	3,5÷4,5	9,5	–	–
6	6	4÷5	16	6	100
	8	4÷5	12	–	–
7	6	4÷5	24	7	120
	8	3,5÷4	18	6	100
8	6	4÷5,5	26	9	160
	8	3,5÷4,5	20	7	130
9	6	4÷6	28	11	200
	8	3,5÷5	21	8	150
10	6	4÷6	30	12	220
	8	4÷5	22	9	160

Mounting heights



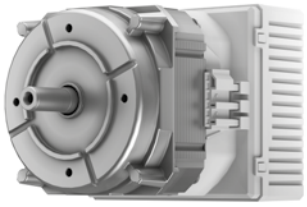


Unit Heater with EC Brushless Electronic Motor and Inverter Board



Sabiana Atlas series is available, for the first 6 sizes, in version with electronic motor and inverter board.

For the technical characteristics of the various components refer to Atlas Unit Heater, excluding the Electronic motor and the Helicoidal fan.



Electronic motor

Single phase permanent magnet brushless electronic motor, IP 44 protection and class B insulation. It is controlled with reconstructed current according to a sinusoidal wave.
The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a switching system, it generates a three-phase frequency modulated, wave form power supply. The electric power supply required for the machine is therefore single-phase with voltage of 200 - 240 V and frequency of 50 - 60 Hz.

Helicoidal fan

The fan is made with statically and dynamically balanced plastic. Its rational high-capacity profile provides the maximum air volume with the minimum energy consumption. The finger proof guard is painted with electroplating treatment, that ensures more protection against corrosion.
The air flow is uniformly distributed through the whole coil and consequently the unit is very quiet.

Heating mode

Entering air temperature: 15 °C

Model		AT-ECM 11						AT-ECM 12						AT-ECM 13					
Inverter power		1	2	4	6	8	10	1	2	4	6	8	10	1	2	4	6	8	10
Speed	rpm	513	609	820	1017	1224	1301	513	609	820	1017	1224	1301	513	609	820	1017	1224	1301
Air flow	m^3/h	477	588	830	1057	1296	1385	440	540	765	975	1195	1275	418	516	728	927	1137	1215
WT=85/75°C Heating emission	kW	3,61	4,00	4,70	5,25	5,73	5,89	5,32	6,03	7,35	8,36	9,27	9,56	6,22	7,15	8,94	10,35	11,62	12,04
WT=85/75°C Leaving air temperature	°C	37	35	32	29	28	27	50	48	43	40	38	37	58	56	51	48	45	44
WT=85/70°C Heating emission	kW	3,12	3,45	4,04	4,50	4,89	5,03	4,65	5,25	6,36	7,22	7,97	8,22	5,50	6,28	7,80	8,98	10,04	10,39
WT=85/70°C Leaving air temperature	°C	34	32	29	27	26	26	46	43	39	37	35	34	53	51	46	43	41	40
WT=80/60°C Heating emission	kW	2,30	2,54	2,94	3,25	3,53	3,62	3,49	3,91	4,70	5,29	5,82	5,99	4,18	4,75	5,83	6,66	7,42	7,65
WT=80/60°C Leaving air temperature	°C	29	28	25	24	23	23	38	36	33	31	29	29	44	42	38	36	34	33
Motor power input	W	10,7	14,3	27,1	46,4	77,0	90,4	10,7	14,3	27,1	46,4	77,0	90,4	10,7	14,3	27,1	46,4	77,0	90,4
Sound power (Lw)	dB(A)	47,0	51,0	59,0	64,0	68,0	70,0	47,0	51,0	59,0	64,0	68,0	70,0	47,0	51,0	59,0	64,0	68,0	70,0
Sound pressure (Lp) (1)	dB(A)	25,0	29,0	37,0	42,0	46,0	48,0	25,0	29,0	37,0	42,0	46,0	48,0	25,0	29,0	37,0	42,0	46,0	48,0
Concealed installation: Height	m	2.5 ÷ 3,5																	
Concealed installation: Throw	m	4	4,5	5	5,5	6	6,5	4	4,5	5	5	5,5	6	4	4,5	4,5	5	5,5	6
Ceiling installation: Height	m	-	-	-	2,5	3	3,5	-	-	-	2,5	3	3	-	-	-	2,6	3	3
Ceiling installation: Influence area	m^2	-	-	-	35	40	40	-	-	-	35	40	40	-	-	-	35	40	40

(1) The sound pressure levels dB(A) are measured at a distance of 5m, directional factor Q = 2, compliant with the EN 3744 standard
WT Water temperature

Entering air temperature: 15 °C

Model		AT-ECM 21						AT-ECM 22						AT-ECM 23					
Inverter power		1	2	4	6	8	10	1	2	4	6	8	10	1	2	4	6	8	10
Speed	rpm	518	617	812	1012	1225	1301	518	617	812	1012	1225	1301	518	617	812	1012	1225	1301
Air flow	m^3/h	767	936	1274	1620	1989	2121	705	860	1175	1490	1830	1955	672	821	1117	1421	1745	1861
WT=85/75°C Heating emission	kW	5,58	6,14	7,11	7,91	8,65	8,87	8,34	9,39	11,18	12,67	14,03	14,48	9,82	11,23	13,66	14,31	15,56	18,31
WT=85/75°C Leaving air temperature	°C	36	34	31	29	28	27	50	47	43	40	37	37	58	55	51	50	48	44
WT=85/70°C Heating emission	kW	4,95	5,43	6,26	6,97	7,58	7,78	7,45	8,36	9,91	11,19	12,36	12,75	8,83	10,06	12,20	12,73	13,84	16,22
WT=85/70°C Leaving air temperature	°C	34	32	29	28	26	26	46	43	40	37	35	34	54	51	47	46	44	40
WT=80/60°C Heating emission	kW	3,81	4,16	4,77	5,29	5,74	5,89	5,80	6,48	7,62	8,57	9,45	9,74	6,95	7,88	9,48	9,88	10,68	12,44
WT=80/60°C Leaving air temperature	°C	29	28	26	25	23	23	39	37	34	32	30	30	45	43	40	39	37	35
Motor power input	W	15,2	21,7	42,9	77,0	132,8	158,1	15,2	21,7	42,9	77,0	132,8	158,1	15,2	21,7	42,9	77,0	132,8	158,1
Sound power (Lw)	dB(A)	48,5	53,0	61,0	66,5	70,5	72,5	48,5	53,0	61,0	66,5	70,5	72,5	48,5	53,0	61,0	66,5	70,5	72,5
Sound pressure (Lp) (1)	dB(A)	26,5	31,0	39,0	44,5	48,5	50,5	26,5	31,0	39,0	44,5	48,5	50,5	26,5	31,0	39,0	44,5	48,5	50,5
Concealed installation: Height	m	2.5 ÷ 3,5																	
Concealed installation: Throw	m	5	5,5	6	6,5	7	8	4,5	5	5,5	5,7	7	7,5	4,5	5	5,5	6	6,5	7
Ceiling installation: Height	m	-	-	-	3	3,5	4	-	-	-	3	3,5	3,5	-	-	-	3	3	3,5
Ceiling installation: Influence area	m^2	-	-	-	45	45	50	-	-	-	45	45	45	-	-	-	40	40	40

(1) The sound pressure levels dB(A) are measured at a distance of 5m, directional factor Q = 2, compliant with the EN 3744 standard
WT Water temperature

Heating mode

Entering air temperature: 15 °C

Model		AT-ECM 31						AT-ECM 32						AT-ECM 33					
Inverter power		1	2	4	6	8	10	1	2	4	6	8	10	1	2	4	6	8	10
Speed	rpm	502	606	818	1016	1212	1300	502	606	818	1016	1212	1300	502	606	818	1016	1212	1300
Air flow	m^3/h	1025	1287	1819	2317	2810	3032	935	1175	1665	2120	2570	2775	876	1100	1555	1980	2402	2592
WT=85/75°C Heating emission	kW	7,62	8,53	10,04	11,17	12,12	12,50	11,32	12,99	15,76	17,89	19,64	20,40	13,17	15,35	19,11	22,03	24,51	25,59
WT=85/75°C Leaving air temperature	°C	37	34	31	29	28	27	50	47	43	40	37	36	59	56	51	48	45	44
WT=85/70°C Heating emission	kW	6,86	7,66	9,00	9,98	10,84	11,15	10,27	11,75	14,20	16,08	17,66	18,29	11,98	13,93	17,30	19,90	22,10	23,04
WT=85/70°C Leaving air temperature	°C	35	32	29	28	26	26	47	44	40	37	35	34	55	52	48	44	42	41
WT=80/60°C Heating emission	kW	5,43	6,05	7,07	7,81	8,46	8,71	8,20	9,33	11,24	12,67	13,89	14,36	9,66	11,20	13,77	15,77	17,50	18,19
WT=80/60°C Leaving air temperature	°C	30	29	26	25	24	23	41	38	35	32	31	30	47	45	41	38	36	36
Motor power input	W	19,1	30,0	67,4	124,8	207,2	253,7	19,1	30,0	67,4	124,8	207,2	253,7	19,1	30,0	67,4	124,8	207,2	253,7
Sound power (Lw)	dB(A)	51,5	55,5	63,5	69,0	73,0	75,5	51,5	55,5	63,5	69,0	73,0	75,5	51,5	55,5	63,5	69,0	73,0	75,5
Sound pressure (Lp) [1]	dB(A)	29,5	33,5	41,5	47,0	51,0	53,5	29,5	33,5	41,5	47,0	51,0	53,5	29,5	33,5	41,5	47,0	51,0	53,5
Concealed installation: Height	m	2.5 ÷ 3,5																	
Concealed installation: Throw	m	6,5	7,5	8,5	10	11	12	6,5	7	8	9	10	10,5	6	7	8	8,5	9,5	10
Ceiling installation: Height	m	-	-	3,5	4	4	4,5	-	-	3,5	3,5	4	4	-	-	-	3,5	3,5	4
Ceiling installation: Influence area	m^2	-	-	50	55	60	60	-	-	50	50	55	60	-	-	-	50	50	55

(1) The sound pressure levels dB(A) are measured at a distance of 5m, directional factor Q = 2, compliant with the EN 3744 standard
WT Water temperature

Entering air temperature: 15 °C

Model		AT-ECM 41						AT-ECM 42						AT-ECM 43					
Inverter power		1	2	4	6	8	10	1	2	4	6	8	10	1	2	4	6	8	10
Speed	rpm	518	613	810	1019	1218	1299	518	613	810	1019	1218	1299	518	613	810	1019	1218	1299
Air flow	m^3/h	1460	1780	2445	3155	3830	4110	1235	1505	2070	2670	3240	3475	1073	1310	1799	2321	2816	3020
WT=85/75°C Heating emission	kW	10,44	11,52	13,34	14,93	16,20	16,66	15,01	16,88	20,17	23,09	25,37	26,23	16,61	19,04	23,39	27,22	30,46	31,69
WT=85/75°C Leaving air temperature	°C	36	34	31	29	27	27	51	48	44	40	38	37	60	58	53	49	47	46
WT=85/70°C Heating emission	kW	9,52	10,48	12,11	13,53	14,68	15,08	13,74	15,44	18,38	20,97	23,09	23,88	15,30	17,48	21,37	24,89	27,76	28,87
WT=85/70°C Leaving air temperature	°C	34	32	29	28	26	26	48	45	41	38	36	35	57	54	50	46	44	43
WT=80/60°C Heating emission	kW	7,67	8,42	9,71	10,82	11,70	12,04	11,15	12,51	14,87	16,89	18,53	19,15	12,55	14,27	17,38	20,14	22,42	23,26
WT=80/60°C Leaving air temperature	°C	30	29	27	25	24	24	41	39	36	34	32	31	49	47	43	40	38	38
Motor power input	W	21,0	32,0	65,0	119,0	192,0	253,0	21,0	32,0	65,0	119,0	192,0	253,0	21,0	32,0	65,0	119,0	192,0	253,0
Sound power (Lw)	dB(A)	53,5	58,5	66,5	72,5	77,0	79,0	53,5	58,5	66,5	72,5	77,0	79,0	53,5	58,5	66,5	72,5	77,0	79,0
Sound pressure (Lp) [1]	dB(A)	31,5	36,5	44,5	50,5	55,0	57,0	31,5	36,5	44,5	50,5	55,0	57,0	31,5	36,5	44,5	50,5	55,0	57,0
Concealed installation: Height	m	3 ÷ 4.5																	
Concealed installation: Throw	m	8,5	9,5	11	12,5	14	14,5	6,5	7	8,5	9,6	11	12,5	6	6,5	8	9	10	11
Ceiling installation: Height	m	-	-	4	4,5	5	5	-	-	3,5	4	4	4,5	-	-	-	3,5	4	4
Ceiling installation: Influence area	m^2	-	-	60	65	70	70	-	-	50	55	60	65	-	-	-	50	55	60

(1) The sound pressure levels dB(A) are measured at a distance of 5m, directional factor Q = 2, compliant with the EN 3744 standard
WT Water temperature

Heating mode

Entering air temperature: 15 °C

Model		AT-ECM 51						AT-ECM 52						AT-ECM 53					
Inverter power		1	2	4	6	8	10	1	2	4	6	8	10	1	2	4	6	8	10
Speed	rpm	519	612	821	1013	1224	1302	519	612	821	1013	1224	1302	519	612	821	1013	1224	1302
Air flow	m^3/h	1790	2185	3060	3870	4755	5085	1545	1880	2635	3335	4100	4380	1379	1681	2355	2977	3658	3910
WT=85/75°C Heating emission	kW	13,09	14,45	16,91	18,77	20,45	21,01	18,99	21,35	25,80	29,19	32,34	33,37	21,35	24,42	30,38	34,96	39,34	40,84
WT=85/75°C Leaving air temperature	°C	36	34	31	29	28	27	51	48	44	41	38	37	60	58	53	49	46	46
WT=85/70°C Heating emission	kW	12,05	13,28	15,48	17,18	18,72	19,20	17,51	19,68	23,71	26,81	29,65	30,61	19,80	22,61	28,01	32,17	36,18	37,46
WT=85/70°C Leaving air temperature	°C	35	33	30	28	27	26	48	46	41	39	36	35	57	54	50	47	44	43
WT=80/60°C Heating emission	kW	9,83	10,81	12,62	13,94	15,17	15,54	14,42	16,16	19,38	21,86	24,16	24,90	16,41	18,67	23,05	26,38	29,62	30,63
WT=80/60°C Leaving air temperature	°C	31	29	27	26	24	24	42	40	37	34	32	32	50	48	44	41	39	38
Motor power input	W	59,0	104,0	156,0	219,0	265,0	265,0	59,0	104,0	156,0	219,0	265,0	265,0	59,0	104,0	156,0	219,0	265,0	265,0
Sound power (Lw)	dB(A)	56,5	61,5	69,0	74,5	79,5	82,0	56,5	61,5	69,0	74,5	79,5	82,0	56,5	61,5	69,0	74,5	79,5	82,0
Sound pressure (Lp) (1)	dB(A)	34,5	39,5	47,0	52,5	57,5	60,0	34,5	39,5	47,0	52,5	57,5	60,0	34,5	39,5	47,0	52,5	57,5	60,0
Concealed installation: Height	m	3 ÷ 4.5																	
Concealed installation: Throw	m	10	12,6	15	17	19	19	8	10,5	12	14	15	15	7	9	10,5	12	13	13
Ceiling installation: Height	m	-	-	5	5,5	6	6	-	-	4,5	5	5	5	-	-	4	4,5	5	5
Ceiling installation: Influence area	m^2	-	-	80	80	85	85	-	-	70	75	80	80	-	-	65	70	75	75

(1) The sound pressure levels dB(A) are measured at a distance of 5m, directional factor Q = 2, compliant with the EN 3744 standard
WT Water temperature

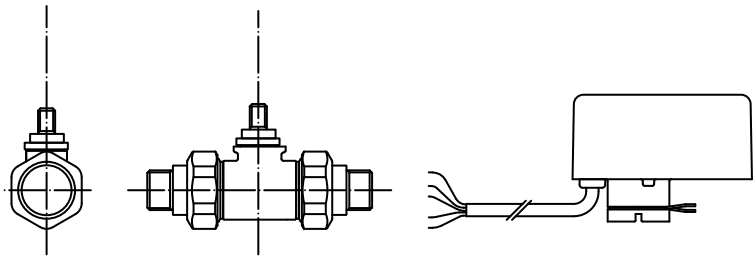
Entering air temperature: 15 °C

Model		AT-ECM 61						AT-ECM 62						AT-ECM 63					
Inverter power		1	2	4	6	8	10	1	2	4	6	8	10	1	2	4	6	8	10
Speed	rpm	510	615	821	1016	1216	1301	510	615	821	1016	1216	1301	510	615	821	1016	1216	1301
Air flow	m^3/h	1895	2380	3335	4235	5165	5555	1695	2130	2980	3790	4620	4970	1539	1936	2710	3444	4198	4517
WT=85/75°C Heating emission	kW	15,01	16,82	19,76	22,02	23,96	24,73	21,87	25,19	30,50	34,72	38,33	39,72	24,65	28,97	36,04	41,70	46,82	48,80
WT=85/75°C Leaving air temperature	°C	38	36	32	30	29	28	53	50	45	42	39	38	62	59	54	50	48	47
WT=85/70°C Heating emission	kW	13,86	15,55	18,24	20,29	22,09	22,78	20,32	23,35	28,20	32,06	35,41	36,70	23,00	26,93	33,44	38,64	43,28	45,10
WT=85/70°C Leaving air temperature	°C	36	34	31	29	28	27	50	47	43	40	37	37	59	56	51	48	45	44
WT=80/60°C Heating emission	kW	11,47	12,81	14,98	16,68	18,13	18,68	16,88	19,37	23,34	26,48	29,17	30,20	19,25	22,48	27,76	32,00	35,82	37,27
WT=80/60°C Leaving air temperature	°C	33	31	28	27	25	25	44	42	38	35	33	33	52	49	45	42	40	39
Motor power input	W	27,3	44,6	98,7	183,2	315,5	386,5	27,3	44,6	98,7	183,2	315,5	386,5	27,3	44,6	98,7	183,2	315,5	386,5
Sound power (Lw)	dB(A)	57,5	62,5	70,5	76,5	81,0	83,0	57,5	62,5	70,5	76,5	81,0	83,0	57,5	62,5	70,5	76,5	81,0	83,0
Sound pressure (Lp) (1)	dB(A)	35,5	40,5	48,5	54,5	59,0	61,0	35,5	40,5	48,5	54,5	59,0	61,0	35,5	40,5	48,5	54,5	59,0	61,0
Concealed installation: Height	m	3 ÷ 5																	
Concealed installation: Throw	m	11	14	17	20	22	22	9	11,5	13,5	16	17	17	8	9,5	11,5	13,5	14,5	14,5
Ceiling installation: Height	m	-	-	5,5	6	6,5	6,5	-	-	5	5	5,5	5,5	-	-	4,5	5	5	5
Ceiling installation: Influence area	m^2	-	-	90	95	100	100	-	-	85	90	90	90	-	-	80	85	85	85

(1) The sound pressure levels dB(A) are measured at a distance of 5m, directional factor Q = 2, compliant with the EN 3744 standard
WT Water temperature

VA2V **2 way valve**

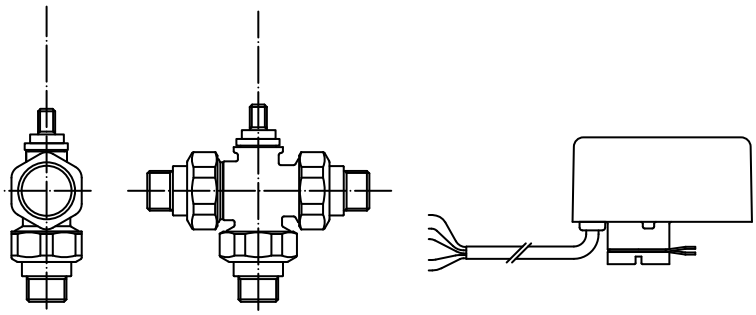
Composed by:
- one 2-way valve
- one ON-OFF 230V actuator



2 way valve Actuator

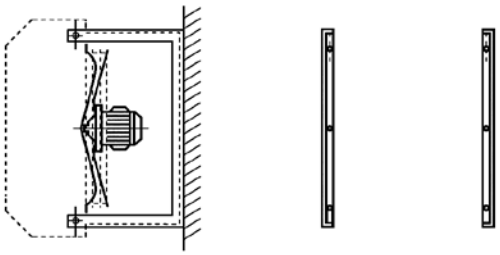
VA3V **3 way valve**

Composed by:
- one 3-way valve
- one ON-OFF 230V actuator

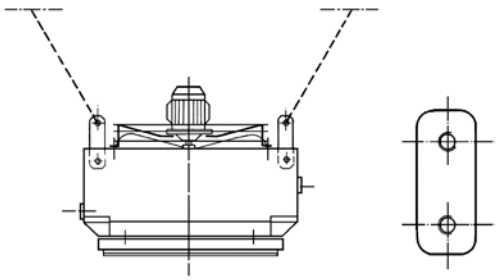


3 way valve Actuator

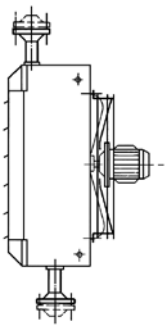
AMP **Wall bracket**



AS **Suspension plate for ceiling installation**

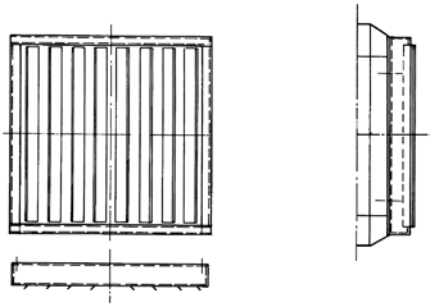


AF **Flanged connections PN16 UNI 2282**
(Atlas ECM excluded)



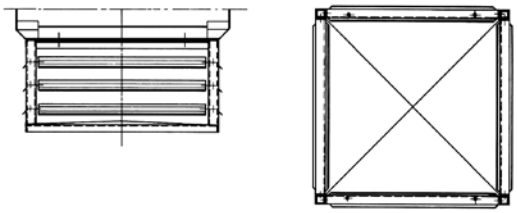
AD **4 way diffuser**

To be used when discharging downflow to create a 4 way discharge pattern
For normal heights of installation



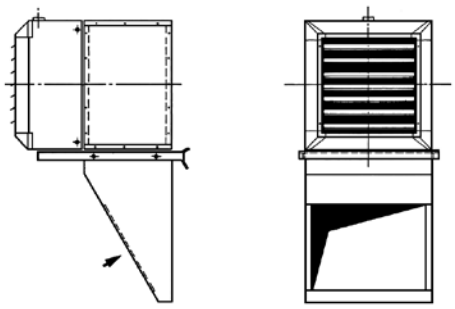
AW4 **4 way diffuser**

To be used when discharging downflow to create a 4 way discharge pattern
For low heights of installation



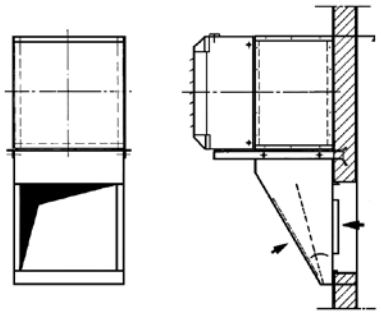
ARC **Simple intake hood fitted underneath**

Wall bracket included
Prepainted steel thickness 1 mm



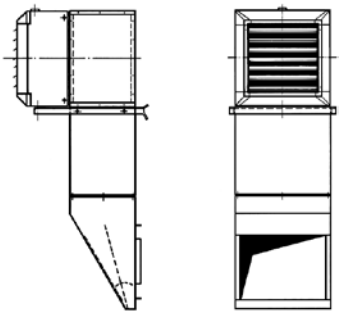
AMC **Double intake hood**
with internal/external air mixing, manually controlled damper

Wall bracket included
Prepainted steel thickness 1 mm



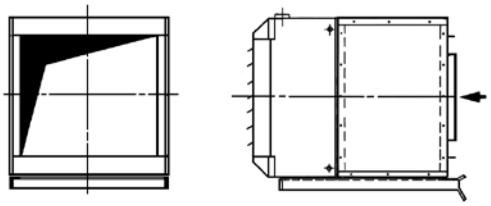
AP **Intermediate section for ARC and AMC air boxes**

Prepainted steel thickness 1 mm



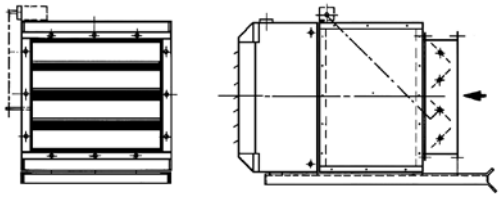
AE **Fresh air box**

Prepainted steel thickness 1 mm



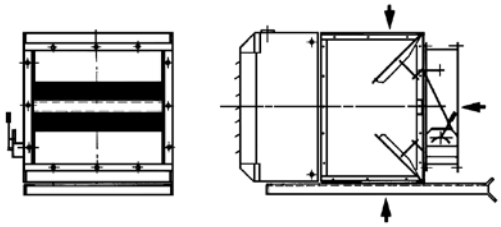
AES **Fresh air box with manually operated damper (can be motorized by the customer)**

Prepainted steel thickness 1 mm



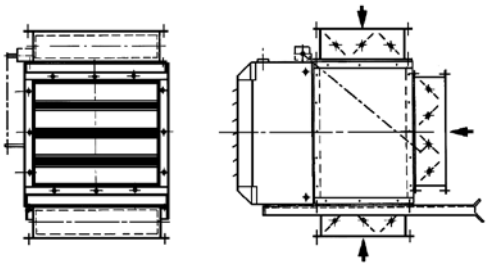
AM **Internal/external air mixing box manually controlled**

Prepainted steel thickness 1 mm

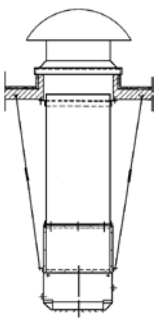


AMS **Internal/external air mixing box, manually controlled (can be motorized by customer)**

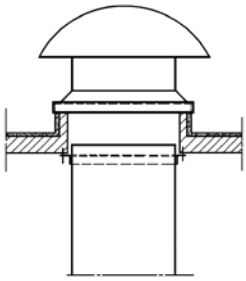
Prepainted steel thickness 1 mm



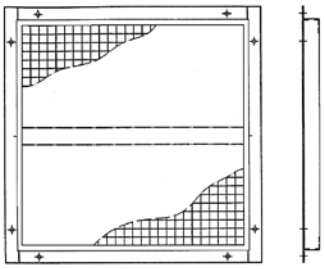
AC **Intermediate section for AE - AES - AM - AMS air boxes**
(Atlas ECM excluded)



AT **Roof-mounted air intake**
(Atlas ECM excluded)

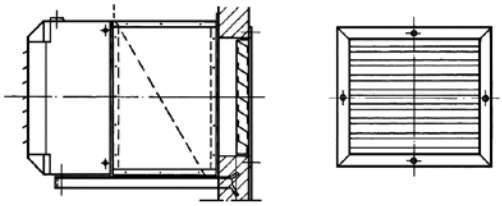


APP **Ball protection grid**



AG **Fresh air intake grille suitable with AE - AES - AMC air boxes**

Galvanized steel thickness 1 mm



- **Two speed Delta-Star motors, 4/6 or 6/8 poles, three phase, IP 55, with klixon thermic protection**

DSS **Delta-Star switch**
for two speed Delta-Star motors, 4/6 or 6/8 poles

Manual two-position switch
for two speed Delta-Star motors, 4/6 or 6/8 poles

BS 2S without thermostat
BS 2-ST with thermostat

Multi-function automatic control panel
for two speed Delta-Star motors, 4/6 or 6/8 poles

BSA-B without timer
BSA-A with manual daily timer
BSA-D with digital weekly timer

- **Single speed flame proof motor II 2G IIB T4/T3 - compliant with the ATEX Standard**

- **Capacitor for single phase motor (not mounted)**

WM-UH-ECM2	**Control board**	
LC-P220	**0-10V/230V signal generator**	
NTC-10K-WM	**NTC remote probe 10K IP55 for WM-UH-ECM2 control board** Only for remote air probe to be used with WM-UH-ECM2 control board	
WM-S-ECM	**Control with continuous variation** with electronic thermostat, summer/winter switch and LCD display	

Helios
Unit Heater

The **Helios Sabiana** unit heaters, built with the same criteria of sturdiness and safety that define all Sabiana products, stand out for the splendid design of the casing, made using anodised aluminium bars and polished die-cast corners. They have the same big heart as the Atlas unit heaters: a coil that has been conceived, designed and manufactured specifically for heating industrial environments. The thickness of the pipes, standard in steel, the diameter (Ø 22 mm) and the excellent ratio between the flow-rate of air and the heat output guarantee long life and exceptional comfort.

Helios unit heaters are produced in **6 sizes** from **5 to 60 kW** and are available with a 1-row coil for steam and high temperature hot water installations, a 2-row coil for hot water installations and a 3-row coil for low temperature hot water installations.

The coil of Sabiana Helios unit heaters with steel tubes Ø 22 mm and aluminium fins has the following **advantages** compared with the copperaluminium small diameter tube coils: the material used for the steel tube, which is very thick (1 mm instead of 0,3 - 0,4 mm), makes the Sabiana coil extremely sturdy and long lasting. The tube's big diameter reduces the water pressure drop: this means that reduced power pumps are installed and a very rapid heating capacity is provided. The Sabiana coil for unit heaters uses a reduced number of tubes to give the same yield: this determines a low resistance to the air flow and consequently an optimum leaving air temperature and a very high throw.
The greater spacing between the fins as well as their thickness facilitate cleaning and maintenance operations, which is essential to keep the unit heater efficient.

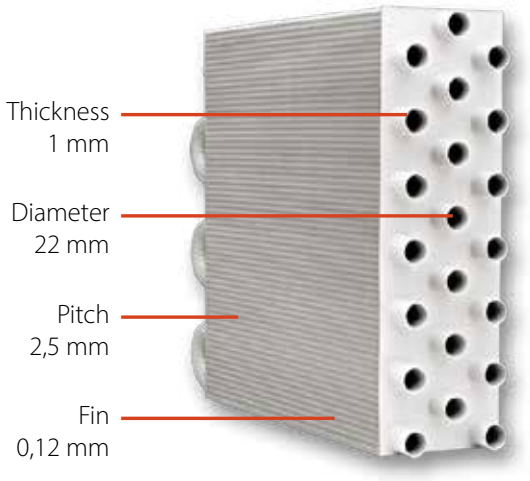
The steel tube coil is **the ideal choice for plants** where all tubes and equipment are made of steel because it avoids physical and chemical unbalance due to the interaction of different metals.

The special painting coat makes the coil long lasting and increases the thermal output.
The Sabiana coil can be used with hot water, high temperature hot water or steam, even with a high working pressure. As a matter of fact each coil is submitted to two tests at 30 bars.

However Sabiana, in order to meet any design and installation need, can offer a complete set of unit heaters with copper tubes and aluminium fins. This coil has the same features (tube diameter, fin pitch, etc.) of the steel coil but it is built with copper tube 0,7 mm thick, of higher quality and with a total weight which is double compared with the coils normally used for unit heaters.

Upon request, all sizes are available with the **innovative electronic motors** with extremely low energy consumption, controlled by an inverter board and identified by ECM.
The ECM motors allow to decrease electric consumption compared to traditional asynchronous motors and they enable to adjust the air flow continuously and control the ambient temperature with precision, with further benefits in terms of very low noise levels.

- The **main casing** is manufactured from 4 angular diecast aluminium components and lateral elements made of extruded, anodized aluminium in a silver colour.
- The **coil** is manufactured from the highest **quality steel or copper tube**. The fins are pressed from aluminium sheet and bonded onto the tubes facilitating the maximum transfer contact available.
- The **fan and motor assembly** consists of three components: the fan, the motor and the safety guard, which also acts as the main support. The standard motor is a hermetically sealed motor which is maintenance free. The motors are supplied as standard for a three phase 230/400V 50Hz supply, and they are available, according to the size, with 4/6 or 6/8 pole two speed (protection IP55) and with 4 or 6 pole one speed (protection IP44).

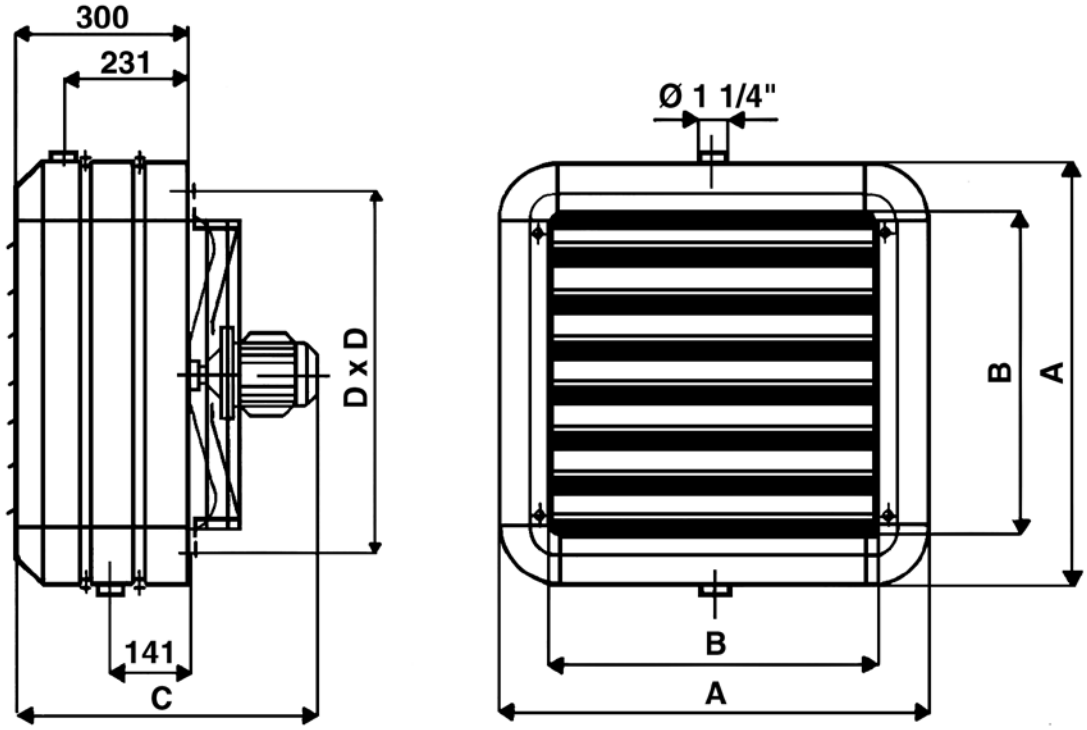


Helios identification code

Reference: 46H53 SX

46	H	5	3	SX	SP
Motor 4/6 pole (1350/1000 r.p.m.)	Range Helios	Size 5	Rows 3	Coli steel tube	Coil copper tube

DIMENSIONS, WEIGHT, WATER CONTENT



Size	A	B	C	D
1	486	330	477	406
2	540	384	477	460
3	594	438	477	514
4	648	492	500	568
5	702	546	500	622
6	756	600	525	676

Size	Weight kg			Water content liters		
	1R	**2R**	**3R**	**1R**	**2R**	**3R**
1	19	22	24	1,3	2,6	3,9
2	22	25	27	1,6	3,2	4,8
3	26	30	33	1,9	3,8	5,7
4	30	34	38	2,3	4,6	6,9
5	33	40	44	3,0	6,0	9,0
6	38	46	51	3,5	7,0	10,5

4/6 pole models

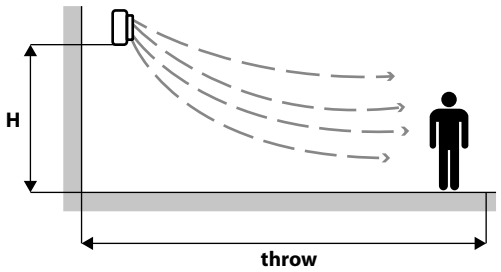
Water temperature 85-75°C
Drop 10°C - Δtm 65°C - Entering air temperature 15°C

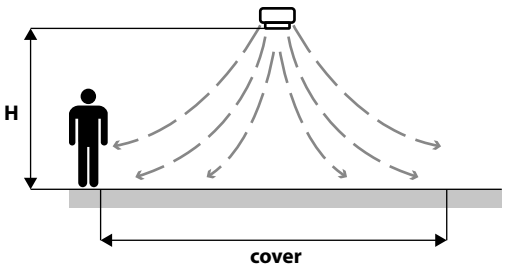
Size	Model	Motor speed r.p.m.		Air flow m^3/h		Noise level at 5 m * dB(A)		Emission kW		Leaving air temp. °C	
		Poles									
		4	6	4	6	4	6	4	6	4	6
1	**46H11**	1350	1000	1415	1055	56	50	–	–	–	–
	46H12	1350	1000	1340	990	56	50	10,24	8,79	37,40	41,00
	46H13	1350	1000	1195	885	56	50	11,39	9,62	42,90	46,80
2	**46H21**	1350	1000	2190	1680	59	53	–	–	–	–
	46H22	1350	1000	2010	1570	59	53	13,95	12,36	35,30	38,00
	46H23	1350	1000	1875	1420	59	53	17,52	15,07	42,40	46,00
3	**46H31**	1350	1000	3325	2510	61	55	–	–	–	–
	46H32	1350	1000	2915	2255	61	55	20,85	18,44	35,90	38,90
	46H33	1350	1000	2610	2040	61	55	25,68	22,41	43,80	47,10
4	**46H41**	1350	1000	4415	3305	64	57	–	–	–	–
	46H42	1350	1000	3725	2745	64	57	27,86	24,06	36,90	40,60
	46H43	1350	1000	3210	2390	64	57	32,03	27,14	44,20	48,20
5	**46H51**	1350	1000	5770	4250	66	59	–	–	–	–
	46H52	1350	1000	4800	3500	66	59	34,89	29,94	36,30	40,00
	46H53	1350	1000	4325	3110	66	59	43,06	35,90	44,10	48,80
6	**46H61**	1350	1000	6590	5065	69	62	–	–	–	–
	46H62	1350	1000	5515	4160	69	62	41,76	36,36	37,20	40,60
	46H63	1350	1000	4900	3620	69	62	50,96	42,98	45,40	49,70

***** The sound pressure levels dB(A) are measured at a distance of 5m, directional factor Q = 2, compliant with the EN 3744 standard.

Size	Poles	Mounting heights			
		horizontal discharge		vertical discharge	
		height m	**throw** m	**height** max m	**cover** m^2
1	4	2,5÷3,5	7,5	3,5	50
	6	2,5÷3	5	3	36
2	4	3÷4	10	4	60
	6	2,5÷3,5	7	3,5	45
3	4	3÷4	13,5	5	70
	6	2,5÷3,5	10	4	50
4	4	3,5÷4,5	16	5,5	75
	6	3÷4	12	4,5	55
5	4	4÷5	18	6	90
	6	3,5÷4,5	13	5	70
6	4	4÷5,5	22	7	120
	6	4÷5	16	6	100

Mounting heights





6/8 pole models

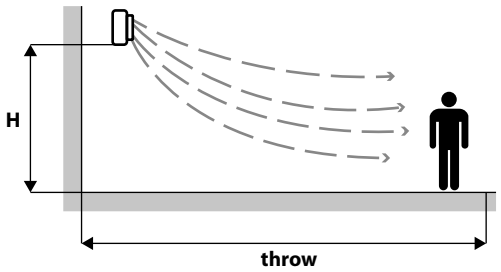
Water temperature 85-75°C
Drop 10°C - Δtm 65°C - Entering air temperature 15°C

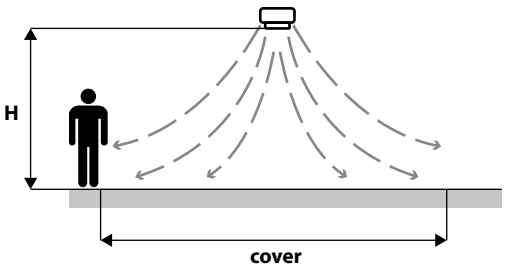
Size	Model	Motor speed r.p.m.		Air flow m^3/h		Noise level at 5 m * dB(A)		Emission kW		Leaving air temp. °C	
		Poles									
		6	8	6	8	6	8	6	8	6	8
1	**68H11**	900	750	970	860	48	44	–	–	–	–
	68H12	900	750	935	830	48	44	8,54	8,01	41,70	43,20
	68H13	900	750	835	740	48	44	9,29	8,65	47,50	49,20
2	**68H21**	900	750	1495	1170	50	46	–	–	–	–
	68H22	900	750	1410	1100	50	46	11,70	10,26	39,30	42,30
	68H23	900	750	1290	1025	50	46	14,23	12,41	47,30	50,40
3	**68H31**	900	750	2100	1620	52	48	–	–	–	–
	68H32	900	750	1880	1470	52	48	16,83	14,74	41,20	44,30
	68H33	900	750	1735	1320	52	48	20,39	17,28	49,40	53,30
4	**68H41**	900	750	2795	2195	54	50	–	–	–	–
	68H42	900	750	2345	1755	54	50	22,14	18,91	42,60	46,50
	68H43	900	750	2010	1535	54	50	24,47	20,70	50,60	54,40
5	**68H51**	900	750	3685	2865	56	51	–	–	–	–
	68H52	900	750	3050	2335	56	51	27,87	24,17	41,70	45,30
	68H53	900	750	2785	2100	56	51	33,58	27,27	50,30	54,40
6	**68H61**	900	750	4445	3550	59	54	–	–	–	–
	68H62	900	750	3710	2960	59	54	34,33	30,37	42,10	45,00
	68H63	900	750	3270	2610	59	54	40,43	35,19	51,20	54,40

***** The sound pressure levels dB(A) are measured at a distance of 5m, directional factor Q = 2, compliant with the EN 3744 standard.

Size	Poles	Mounting heights			
		horizontal discharge		vertical discharge	
		height m	**throw** m	**height** max m	**cover** m^2
1	6	2,5÷3	5	3	36
	8	2,5÷3	4,5	–	–
2	6	2,5÷3,5	7	3,5	45
	8	2,5÷3,5	5,5	–	–
3	6	2,5÷3,5	10	4	50
	8	2,5÷3,5	7	–	–
4	6	3÷4	12	4,5	55
	8	3÷4	8	–	–
5	6	3,5÷4,5	13	5	70
	8	3,5÷4,5	9,5	–	–
6	6	4÷5	16	6	100
	8	4÷5	12	–	–

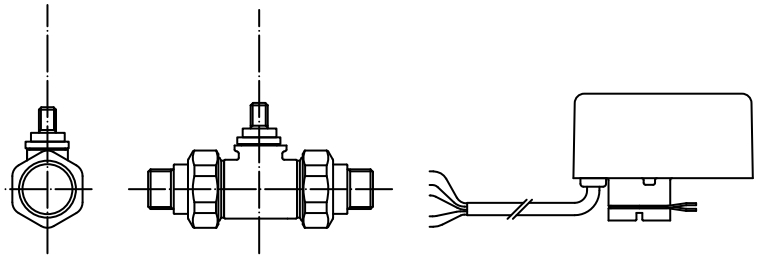
Mounting heights





VA2V **2 way valve**

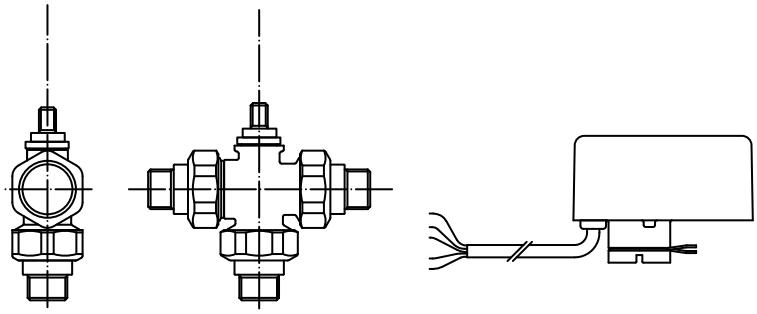
Composed by:
- one 2-way valve
- one ON-OFF 230V actuator



2 way valve Actuator

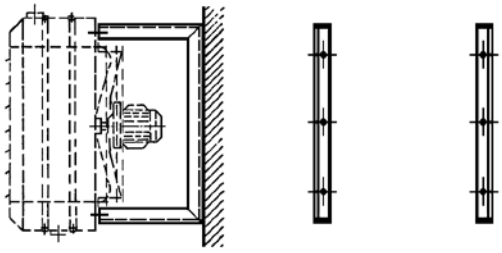
VA3V **3 way valve**

Composed by:
- one 3-way valve
- one ON-OFF 230V actuator

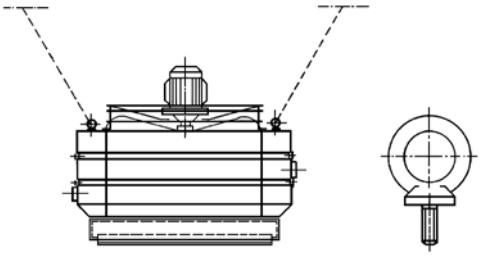


3 way valve Actuator

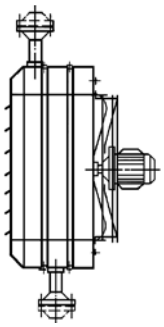
HMP **Wall bracket**



HS **Suspension plate for ceiling installation**

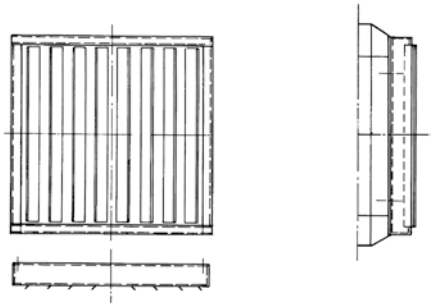


HF **Flanged connections PN16 UNI 2282**



AD **4 way diffuser**

To be used when discharging downflow to create a 4 way discharge pattern.
For normal heights of installation



Controls and special motors

- **Two speed Delta-Star motors, 4/6 or 6/8 poles, three phase, IP 55, with klixon thermic protection**

DSS
Delta-Star switch
for two speed Delta-Star motors, 4/6 or 6/8 poles

Manual two-position switch
for two speed Delta-Star motors, 4/6 or 6/8 poles

- **BS 2S** without thermostat
- **BS 2-ST** with thermostat

Multi-function automatic control panel
for two speed Delta-Star motors, 4/6 or 6/8 poles

- **BSA-B** without timer
- **BSA-A** with manual daily timer
- **BSA-D** with digital weekly timer

- **IP 55 motor protection**
- **Capacitor for single phase motor (not mounted)**

Jetstream

Induction Flow Optimizer

The Atlas, Helios, Atlas ECM and Janus ECM unit heaters can be supplied with the innovative **Jetstream** induction flow optimiser, in the manual version or the motorised version for wall-hung or ceiling installation. The lower outlet temperature of the air from the units means less stratification of the hot air in the building and less operating time for the same ambient temperature.

In addition, the increased air throw means greater uniformity of the temperature at floor level, with an expansion of the comfort zone, and consequently the possibility to install smaller and more silent appliances.

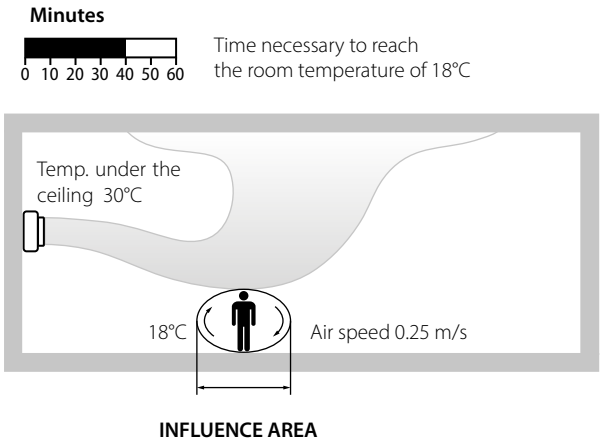
The use of the **Jetstream** induction flow optimizer has the following advantages:

a) Energy saving:
- reduced hot air stratification within the building.
- reduced operating time of the units with the same ambient temperature.

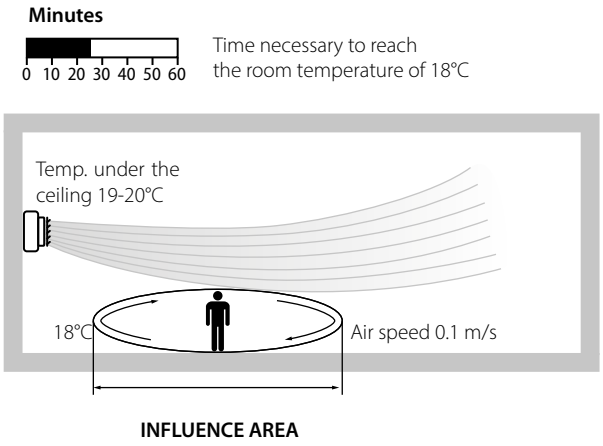
Energy saving varies between a minimum of 5% and a maximum of 15%, with maximum amortization in two seasons.

b) Environment comfort advantages:
- increased floor-temperature uniformity with greater comfort area.
- possibility to install smaller and quieter units, due to the increase of the throw.

Air flow produced by a unit heater without induction flow optimizer



Air flow produced by a unit heater with induction flow optimizer

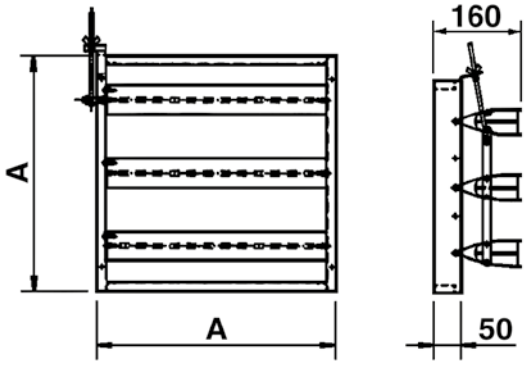


Four versions are available:

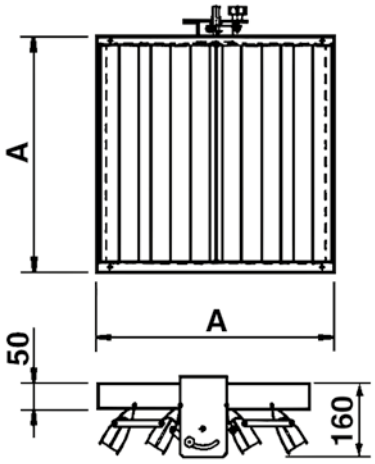
- Manual for wall installation (all sizes)
- Manual for ceiling installation (all sizes)
- Motorized for wall installation (sizes 1÷7 only)
- Motorized for ceiling installation (all sizes)

The manually controlled version calls for manual orientation of the fins and for them to be locked using a special threaded rod.
The motorized version is supplied with single phase motor that can be controlled by the remote switch.

O (horizontal discharge)



V (vertical discharge)

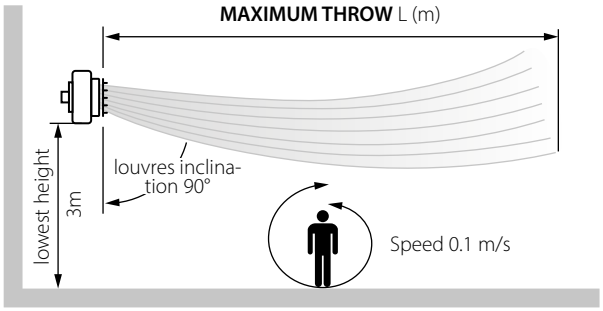


Model		A mm	Weight kg
O - 1	**V - 1**	368	1,4
O - 2	**V - 2**	422	1,7
O - 3	**V - 3**	476	1,8
O - 4	**V - 4**	530	2,0
O - 5	**V - 5**	584	2,2
O - 6	**V - 6**	638	2,4
O - 7	**V - 7**	689	2,6
O - 8	**V - 8**	796	3,0
O - 9	**V - 9**	906	3,4
O - 10	**V - 10**	1012	3,7

Controls

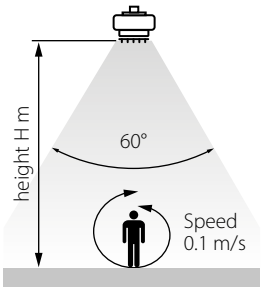
Remote switch

A wall installation for horizontal discharge

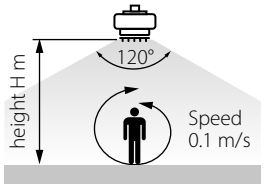


Sabiana unit heater	Maximum throw L (m)					
	without Jetstream			with Jetstream		
Size	4P	6P	8P	4P	6P	8P
1	7,5	5	4,5	12	8	-
2	10	7	5,5	16	11	-
3	13,5	10	7	18	14	-
4	16	12	8	20	15	-
5	18	13	8	23	16	-
6	22	16	12	28	20	-
7	-	24	18	-	28	22
8	-	26	20	-	32	25
9	-	28	21	-	34	26
10	-	30	22	-	37	28

B ceiling installation for vertical discharge



THROW 30° every side



THROW 60° every side

Sabiana unit heater	Installation height H (m)								
	without Jetstream			with Jetstream a 60°			with Jetstream a 120°		
Size	4P	6P	8P	4P	6P	8P	4P	6P	8P
1	4	3	-	5,5	4	-	4	3	-
2	4,5	3,5	-	8	6,5	-	5	4	-
3	5	4	-	11	8	-	6,5	5,5	-
4	5,5	4,5	-	12	9	-	6,5	5,5	-
5	6	5	-	13	10	-	7	6	-
6	7	6	-	14	12	-	8	7	-
7	-	7	6	-	13	11	-	8	7
8	-	9	7	-	15	12	-	10	8
9	-	11	8	-	18	13	-	13	9
10	-	12	9	-	19	14	-	14	10

AIX

Stainless Steel Unit Heater

AIX Sabiana unit heaters are made with stainless steel structures and coils with stainless steel pipes and flanged fittings, and aluminium fins. They are available in four sizes, for a total of eight models. These units can be supplied with hot water, high-temperature hot water and steam.

They are especially suitable for working environments in which these types of system configurations are required.

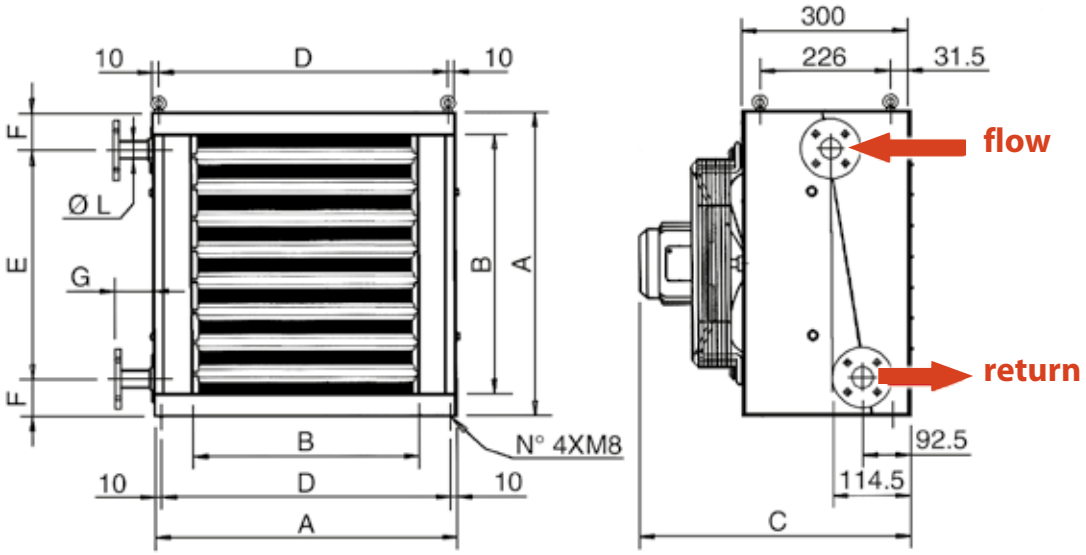
TECHNICAL CHARACTERISTICS

- The **main casing** is manufactured from AISI 304 stainless steel, 1 mm thick.
- The **adjustable louvres** are held firm by spring loaded pivots and they are mounted in horizontal position on the front part of the unit.
- **Coil**: the fins are pressed from aluminium sheet, bonded onto the AISI 304 stainless steel tubes facilitating the maximum transfer contact. The AIX units are supplied with flanged connections.
- The **standard motor** is hermetically sealed and is maintenance free. The motor is 2 speeds, 3 phase, single voltage, 400V 50Hz, protection IP55, with klixon thermal protection.

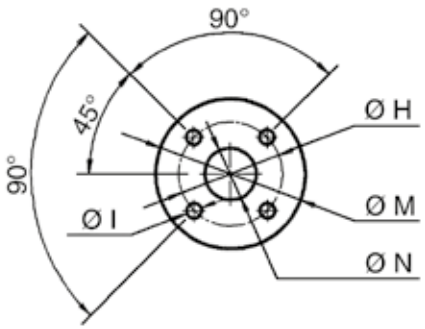
AIX identification code

Reference: 46I42

46	I	4	2
Motor 4/6 pole (1350/1000 r.p.m.)	Range AIX	Size 4	Rows 2



flange



Model	A	B	C	D	E	F	G	ØH	ØI	ØL	ØM	ØN
46 I 21-22	526	393	468	506	330	98	66	65	14	½"	95	15
46 I 41-42	636	501	468	616	497	69.5	66	85	14	1"	115	25
46 I 61-62	743	609	468	723	588	77.5	56	100	18	1 ¼"	140	32
68 I 91-92	1011	877	576	991	832	89.5	87	110	18	1 ½"	150	40

Model	Weight kg		Water content liters	
	1R	2R	1R	2R
46 I 21-22	26	30	1,7	2,5
46 I 41-42	33	38	2,9	4,2
46 I 61-62	45	51	5,3	5,9
68 I 91-92	82	92	8,2	12

Heating emission

Model		46 I 21		46 I 41		46 I 61		68 I 91	
Mounting height	m	2.5 ÷ 4		3 ÷ 4.5		3 ÷ 5		3.5 ÷ 5.5	
Speed	r.p.m.	1350	1000	1350	1000	1350	1000	900	700
Air flow	m^3/h	2300	1500	3900	2600	6900	4400	10200	7600
Throw	m	11	7.5	16	12	25	18	28	21
Noise level at 5 m (*)	dB(A)	59	51	64	54	69	60	68	62
Steam 3 bars	kW	14,30	11,90	23,40	19,80	37,00	31,00	68,40	60,50
Entering air temperature +15°C	Leaving air temp. °C	33,3	38,3	32,6	37,4	30,8	35,7	34,7	38,4
Steam 6 bars	kW	16,50	13,80	27,00	22,90	42,70	35,90	79,00	70,00
Entering air temperature +15°C	Leaving air temp. °C	36.1	42	35.4	40.9	33.2	39	37.8	42.1

Model		46 I 22		46 I 42		46 I 62		68 I 92	
Mounting height	m	2.5 ÷ 4		3 ÷ 4.5		3 ÷ 5		3.5 ÷ 5.5	
Speed	r.p.m.	1350	1000	1350	1000	1350	1000	900	700
Air flow	m^3/h	2100	1400	3600	2400	6300	4100	9200	7000
Throw	m	11	7.5	16	12	25	18	28	21
Noise level at 5 m (*)	dB(A)	59	51	64	54	69	60	68	62
Water temperature 85/75°C	kW	13,00	10,60	21,10	17,20	36,50	29,30	59,20	51,40
Entering air temperature +15°C	Leaving air temp. °C	33,2	37,3	32,2	36,1	32	36	33,9	36,6
Water temperature 130/100°C	kW	18,90	15,40	302,00	247,00	533,00	43,00	841,00	74,00
Entering air temperature +15°C	Leaving air temp. °C	41,5	47,3	39,7	45,3	39,9	45,8	41,9	46,1

(*) = The sound pressure levels dB(A) are measured at a distance of 5m, directional factor Q = 2, compliant with the EN 3744 standard.

Controls

DSS **Delta-Star switch**
for two speed Delta-Star motors, 4/6 or 6/8 poles.

Manual two-position switch
for two speed Delta-Star motors, 4/6 or 6/8 poles.

BS 2S without thermostat
BS 2-ST with thermostat

Multi-function automatic control panel
for two speed Delta-Star motors, 4/6 or 6/8 poles.

BSA-B without timer
BSA-A with manual daily timer
BSA-D with digital weekly timer

Atlas STP

Door Curtain Unit

The **Atlas STP** door curtain units, supplied with hot water, are fitted with special diffusers that create a curtain of hot air. Installed above the door, they deliver a constant vertical flow of air, representing a barrier that, by thermodynamic effect, stops the infiltration of air from the outside, and mixes the residual cold currents. Available in three sizes, with two speed and 1, 2, 3 row coils.

- The **main casing** is **manufactured from galvanized prepainted steel** finished in light grey colour (RAL 9002), and is assembled from three component parts, which are assembled using self-tapping screws in order to allow quick maintenance on the coil.

- **Fishtail diffuser** produced from steel sheet with manually adjustable louvres for individual requirements.

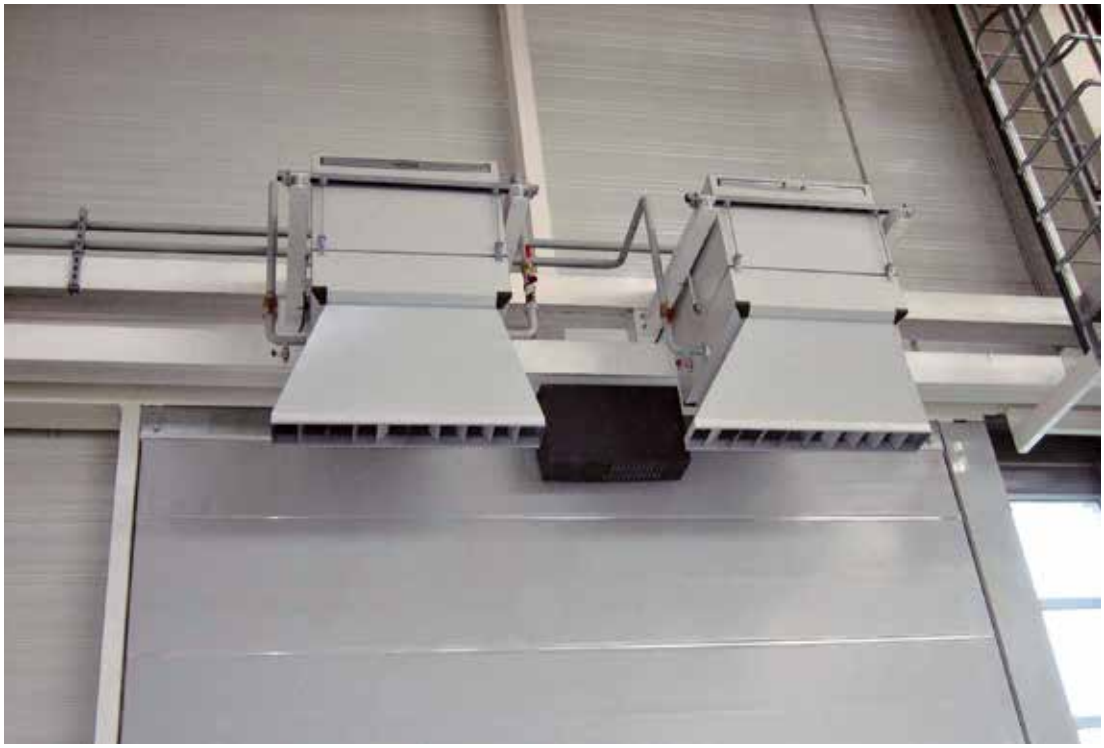
- Coil manufactured from high quality steel or copper tube 22 mm of diameter to reduce resistance with mechanically bonded aluminium fins for high efficient heat transfer. Available in 1, 2 or 3 rows.

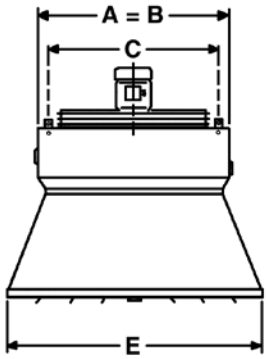
- **The fan** consists of aluminium helicoidal blades statically and dynamically balanced with a cast alloy hub, keyed into the motor shaft and mounted onto the casing with antivibration rubber mounting blocks. The motor is supplied as standard for a three phase, 400V 50Hz, class B, IP55, 6/8 poles two speed: 900 r.p.m. (6 poles) or 700 r.p.m. (8 poles).

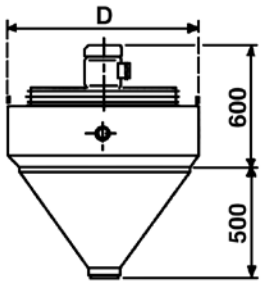
Identification code

Reference: 68A71 SX / STP

68	A	7	1	SX	SP	/ STP
Motor 6/8 pole	Range Atlas	Size 7	Rows 1	Coil steel tube	Coil copper tube	Type STP

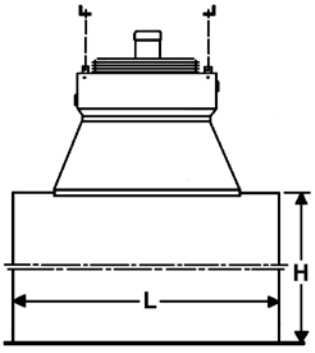


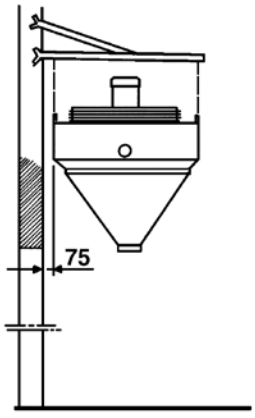




Size	Dimensions				Rows	Weight	Water content
	A=B	C	D	E			
	mm					kg	litres
7	793	696	793	1000	1	62	4,3
					2	70	8,2
					3	76	12,3
8	900	803	900	1200	1	75	5,8
					2	86	11,1
					3	93	16,6
9	1010	913	1010	1400	1	90	7,6
					2	104	14,5
					3	113	21,8

Correct selection of the door curtain





Size	Motor pole	Door height H (m)	Door width L (m)
7	6	3,0 ÷ 4,0	1,5
8	6	3,5 ÷ 4,5	2,0
9	6	4,5 ÷ 5,5	2,5
7	8	2,5 ÷ 3,0	1,5
8	8	3,0 ÷ 3,5	1,8
9	8	3,5 ÷ 4,5	2,0

Entering air temperature 15°C

Size	Model	Motor speed r.p.m.		Air flow m^3/h		Noise level at 5 m * dB(A)		Emission							
								Water temperature 85-70°C				Water temperature 140-100°C			
								kW		Leaving air temperature °C		kW		Leaving air temperature °C	
		Poles													
		6	8	6	8	6	8	6	8	6	8	6	8	6	8
7	68A71/STP	900	750	4435	3440	69	63	–	–	–	–	39,42	35,03	41,0	44,8
	68A72/STP	900	750	4175	3175	69	63	38,15	32,87	41,7	45,3	62,72	54,06	59,0	64,8
	68A73/STP	900	750	4000	3045	69	63	44,87	38,06	47,8	51,5	–	–	–	–
8	68A81/STP	900	750	6655	4700	69	64	–	–	–	–	50,62	43,35	37,2	42,0
	68A82/STP	900	750	6000	4300	69	64	49,08	41,20	38,9	43,0	80,12	67,29	54,1	60,8
	68A83/STP	900	750	5480	3915	69	64	59,42	48,49	46,7	51,2	–	–	–	–
9	68A91/STP	900	750	9220	6610	70	65	–	–	–	–	70,80	61,10	37,5	42,0
	68A92/STP	900	750	8870	6260	70	65	70,79	59,10	38,3	42,6	116,23	96,92	53,3	60,3
	68A93/STP	900	750	8170	5560	70	65	86,68	69,00	46,0	51,3	–	–	–	–

***** = The sound pressure levels dB(A) are measured at a distance of 5 m, directional factor Q = 2, compliant with the EN 3744 standard.

No-Strat

Anti-stratification and Heat Economiser Unit

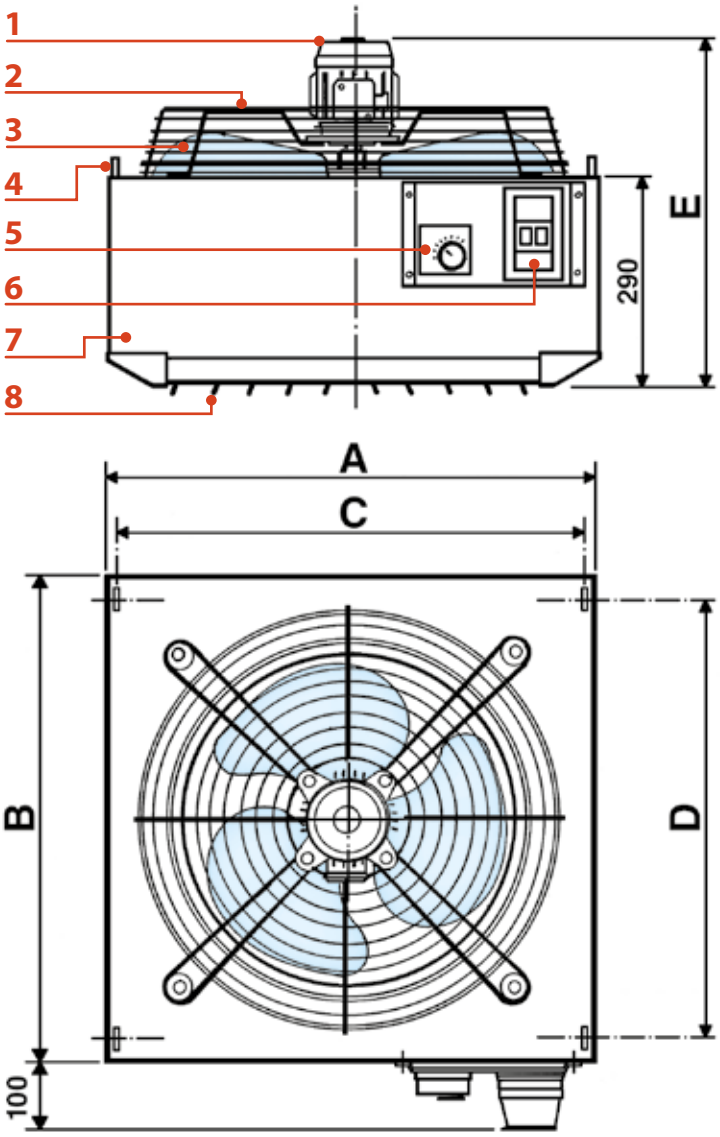
No-Strat, an anti-air-stratification unit, recirculates the hot air downwards, hot air that in large spaces heated with warm air (for example, using hot air generators) tends to stratify towards the top. The temperature controller fitted on the appliance can be used to set the air temperature at which the **No-Strat** starts operation. In addition, it can be used to increase the recirculation air rate and improve the uniformity of the ambient temperature.

The series includes 8 models, with flow-rates from 3.500 to 14.000 m^3/h.

TECHNICAL CHARACTERISTICS

- The **casing** is manufactured from galvanised prepainted steel sheet (1 mm thick) finished in light grey colour (RAL 9002). The adjustable louvres are held firm by spring loaded pivots.
- The fan assembly is made up of the **aluminium helicoidal fan**, the safety guard support and the three phase V400/3 electric motor with 4 or 6 poles, protection IP44.
- A **room thermostat** is mounted on the unit for the automatic on/off switching of the motor in accordance with the temperature under the ceiling.
- **3-phase power switch** V400/3 with built-in overload protection.

1	Three phase electric motor
2	Motor support with safety guard
3	Aluminium fan
4	Brackets
5	Ambient thermostat
6	Switch with thermal relay
7	Galvanised and prepainted steel case
8	Adjustable louvres



Model		A	B	C	D	E	Weight kg
DNS-450/4	**DNS-450/6**	634	634	629	537	488	20
DNS-500/4	**DNS-500/6**	688	688	683	591	488	23
DNS-550/4	**DNS-550/6**	742	742	737	645	513	25
–	**DNS-650/6**	900	900	895	803	575	33
–	**DNS-750/6**	1010	1010	1005	913	595	42

TECHNICAL SPECIFICATIONS

Model	Motor speed r.p.m.	Air flow m^3/h	Installation height m	Surface m^2	Noise level at 5 m * dB(A)
DNS-450/4	1400	4300	4,5 ÷ 6,5	100	61
DNS-450/6	900	2800	3,5 ÷ 6	60	52
DNS-500/4	1400	5500	5 ÷ 8	150	66
DNS-500/6	900	3750	4 ÷ 8	90	56
DNS-550/4	1400	6300	6,5 ÷ 9	200	69
DNS-550/6	900	4600	5 ÷ 8,5	120	60
DNS-650/6	900	9100	6,5 ÷ 11	300	67
DNS-750/6	900	13200	7 ÷ 13	400	68

(*) = The sound pressure levels dB(A) are measured at a distance of 5 m, directional factor Q = 2, compliant with the EN 3744 standard.

Comfort

Circular Unit Heater

Comfort Sabiana circular unit heaters, for ceiling installation only, are especially suitable for high rooms, even if the optimum ratio between the air flow-rate and the heat output make them suitable for any manufacturing environment.

The large coil and the fan downstream of the coil ensure optimum mixing of the air in the environment, meaning less stratification of the hot air than with traditional unit heaters.

Two different diffusers ensure perfect control of the air flow, with the possibility on the more common diffusers to tilt each louvre in the desired direction.

The Comfort unit heaters are made in 10 sizes, with heat outputs from 17 to 107 kW, and one or two speeds motors.

TECHNICAL CHARACTERISTICS

- The **casing** is made of spun steel on both top and bottom sections which is designed to give greater strength and quieter operation. The casing is then finished with an epoxy, polyester powder coating of light grey, RAL 9002.
- The **circular coil** is constructed of copper tubes with aluminium fins.
- The **helicoidal fan** is statically and dynamically balanced, the rational high-capacity profile provides maximum air volume with a minimum power consumption.
- **Standard motors are three phase 400 V**, closed frame, flange mounted, pre-greased bearings. Available with single speed at 4 and 6 pole (IP44), with double speed double wiring at 4/6 pole (IP44) or with two speed Delta-Star motors at 6/8 pole (IP55).

On request:

- **Flanged connections.**
- **Steam execution.**

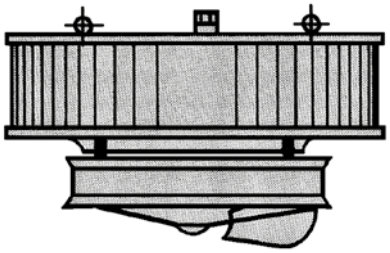
Comfort identification code

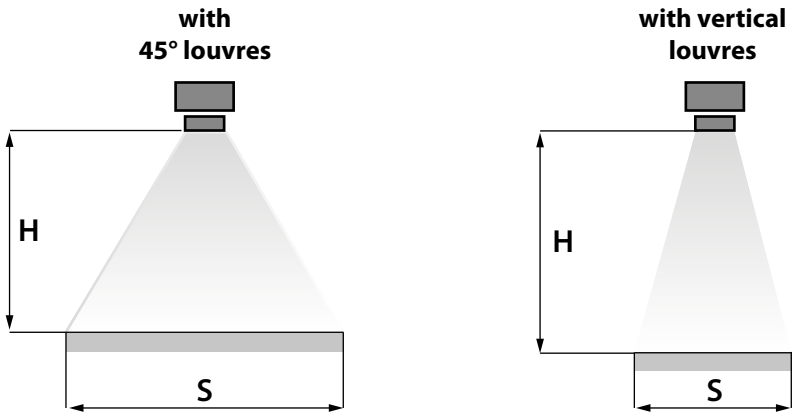
Reference: 6Z-415

6	Z	4	15
Motor 6 pole (900 r.p.m.)	Range Comfort	Size 4	N° of circuits

This is the most commonly used model; made of eight separately adjustable large louvres, shaped so as to be able to cover the whole outlet area and therefore adaptable for minimum to maximum heights.
This diffuser allows the air to be directed more easily to the areas where it is required most, or conversely, if you do not require air to one particular corner you can close down one, two or three vanes and restrict the distribution.

Mounting heights and area of air distribution

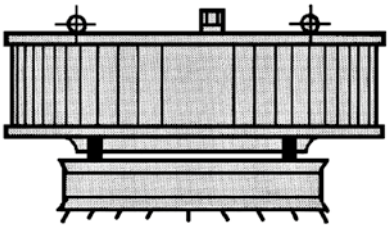


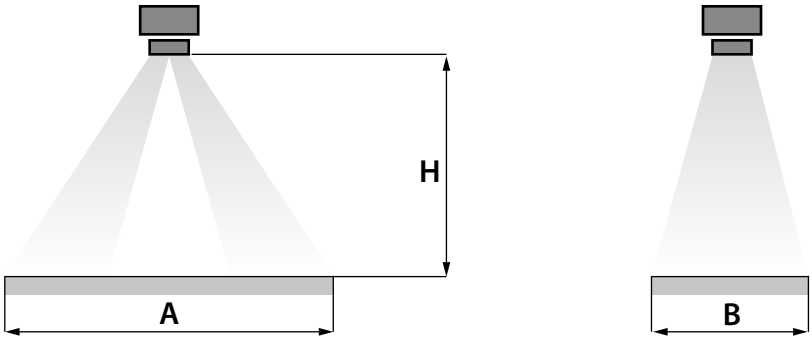


Size	1400 r.p.m. motor speed				900 r.p.m. motor speed			
	45° louvres		Vertical louvres		45° louvres		Vertical louvres	
	H suggested m	S diameter m	H suggested m	S diameter m	H suggested m	S diameter m	H suggested m	S diameter m
0	3÷5	15÷21	4÷6	7,5÷10,5	2,5÷4	10,5÷16,5	3,5÷5	6÷9
1	3,5÷5,5	16,5÷21	4,5÷6,5	9÷12	3÷4,5	12÷18	4÷5,5	7,5÷10,5
2	4÷6	18÷25,5	5÷7	10,5÷13,5	3÷5	12÷19,5	4,5÷6,5	9÷12
3	4÷6,5	18÷27	5,5÷8	10,5÷15	3,5÷5,5	15÷22,5	5÷7	9÷13,5
4	4÷7	18÷28,5	6÷9	10,5÷16,5	3,5÷6	15÷24	5,5÷8	10,5÷15
5	–	–	–	–	4÷6,5	16,5÷25,5	5,5÷8,5	10,5÷15
6	–	–	–	–	4÷8	16,5÷28,5	6÷10	12÷18
7	–	–	–	–	4÷8	16,5÷28,5	6÷10	12÷18
8	–	–	–	–	5÷11	18÷31,5	6,5÷14	13,5÷19,5
9	–	–	–	–	5÷11	18÷33	6,5÷14	13,5÷21

It is designed to give a two way or corridor distribution, suitable for corridor or gangway areas, between storage racks etc., generally mounted at any height depending upon the length of corridor required.

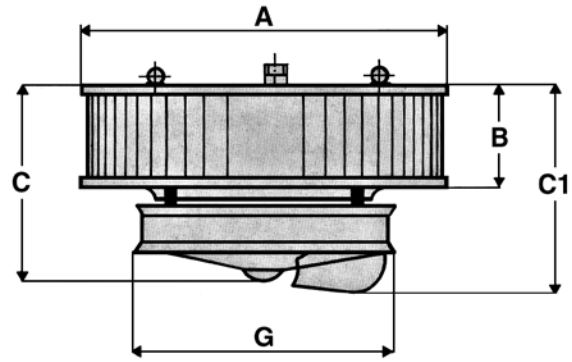
Mounting heights and area of air distribution

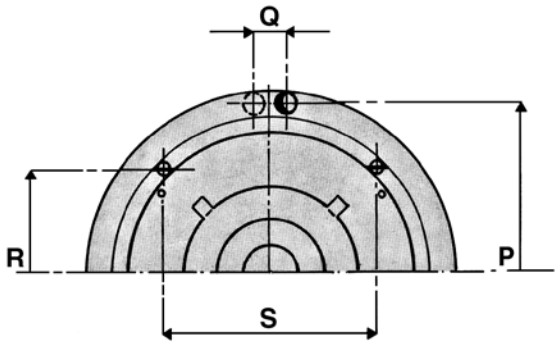




Size	1400 r.p.m. motor speed		900 r.p.m. motor speed	
	H suggested m	Zone m A÷ B	H suggested m	Zone m A÷ B
0	3÷6	15x6÷10x4	2,5÷5	13x5÷9x4
1	3÷6	16x7÷10x5	2,5÷5	14x6÷10x4
2	3,5÷7	18x8 ÷14x5	3÷6	16x7÷10x4
3	3,5÷8	20x10÷14x6	3÷6,5	17x8÷13x5
4	4÷9	22x10÷15x7	3,5÷7	20x10÷15x5
5	–	–	4÷8	22x10÷16x5
6	–	–	4÷10	24x10÷18x6
7	–	–	4÷11	24x11÷20x8
8	–	–	6÷15	26x12÷22x10
9	–	–	6÷15	26x12÷22x10

DRA





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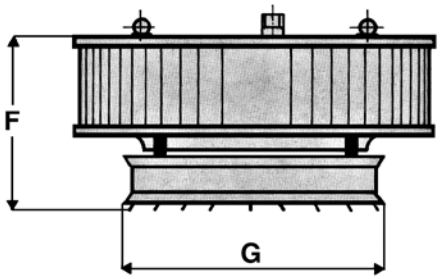
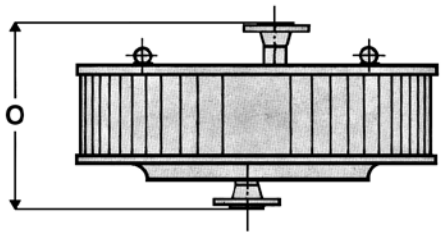




Version with PN 16 flanges

Size	A	B	C	C1	F	G	O	P	Q	R	S	Connections		Weight kg	Water content Litres
												Standard version	Steam version (*)		
												Collectors Ø	DN		
0	680	180	430	560	380	560	331	612	62	350	350	1"¼	25	31	1,2
1	780	180	430	560	380	560	331	702	62	421	421	1"¼	25	36	1,3
2	780	280	530	660	480	560	431	702	62	421	421	1"¼	25	42	1,9
3	880	280	530	700	480	660	435	802	68	491	491	1"½	32	52	2,4
4	880	380	630	760	580	660	535	802	68	491	491	1"½	32	58	3,2
5	1080	380	630	870	580	760	539	1005	80	755	440	2"	40	75	4,3
6	1080	455	705	945	655	760	614	1005	80	755	440	2"	40	85	5,2
7	1080	555	805	1045	755	760	714	1005	80	755	440	2"	40	95	5,9
8	1080	555	815	1055	765	760	714	1005	80	755	440	2"	40	97	5,9
9	1080	605	865	1105	815	760	765	1005	80	755	440	2"	40	106	6,5

* The units with steam coils are supplied with connections for welding; on request they can be supplied with flanges.

TECHNICAL SPECIFICATIONS

Water temperature 85-75°C
Drop 10°C - Δtm 65°C - Entering air temperature 15°C

Size	Pole	Motor speed r.p.m.	Model ref.	Air flow m^3/h	Noise level at 5 m (*) dB(A)	Emission W	Leaving air temperature °C
0	4	1400	4Z-007	3.000	56	24.400	39
1	4	1400	4Z-107	3.400	60	28.400	39
2	4	1400	4Z-211	5.100	63	41.800	39
3	4	1400	4Z-311	6.000	65	48.800	39
4	4	1400	4Z-415	7.800	66	64.400	39
0	6	900	6Z-007	2.000	48	19.100	43
1	6	900	6Z-107	2.400	52	22.100	42
2	6	900	6Z-211	3.700	54	32.700	41
3	6	950	6Z-311	4.400	55	38.000	40
4	6	950	6Z-415	5.700	56	50.200	41
5	6	930	6Z-515	7.100	63	61.500	40
6	6	930	6Z-618	9.000	64	77.800	40
7	6	930	6Z-722	9.900	65	92.000	42
8	6	930	6Z-822	11.000	65	107.000	44
9	6	930	6Z-924	12.000	66	115.100	44

The technical data related to the 8 poles motors circular unit heaters are obtained by multiplying the 6 poles table values as follows:
Thermal emission = W x 0,85
Air flow rate = m^3/h x 0,70

(*) = The sound pressure levels dB(A) are measured at a distance of 5 m, directional factor Q = 2, compliant with the EN 3744 standard.

On request: double speed motor, single tension.

Polaris
Air Conditioner

Polaris Sabiana circular unit heaters, for ceiling installation only, are especially suitable for high rooms, even if the optimum ratio between the air flow-rate and the heat / cool output make them suitable for any manufacturing environment.

The large coil and the fan downstream of the coil ensure optimum mixing of the air in the environment, meaning less stratification of the hot air than with traditional unit heaters.

When supplied with cold water they can also be used in the summer months, thus allowing cooling at very reasonable costs.

The Polaris unit heaters are made in 9 sizes, all fitted with very silent two speeds motors, heat outputs from 17 to 107 kW and cooling capacities from 2 to 20 kW.

TECHNICAL CHARACTERISTICS

- The **casing** is made of spun steel on both top and bottom sections which is designed to give greater strength and quieter operation. The casing is then finished with an epoxy, polyester powder coating of light grey, RAL 9002.
- The **circular coil** is constructed of copper tubes with aluminium fins.
- The **helicoidal fan** is statically and dynamically balanced, the rational high-capacity profile provides maximum air volume with a minimum power consumption.
- **Standard motors are three phase 400 V**, closed frame, flange mounted, pre-greased bearings, protection IP 55. Available with two speed Delta-Star motors at 6/8 pole.

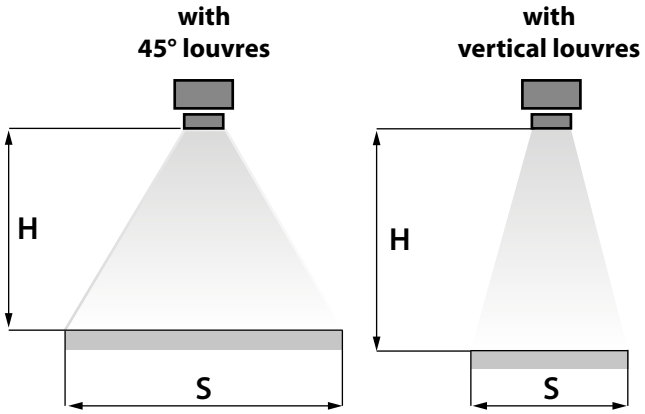
On request:

- **Delta-Star switch** for two speed Delta-Star motors, 6/8 poles, with klixon thermic protection.
- **Manual three-position switch** with thermostat for two speed delta-star motors 6/8 poles, with klixon thermic protection.

Polaris | DRA RADIAL DIFFUSER

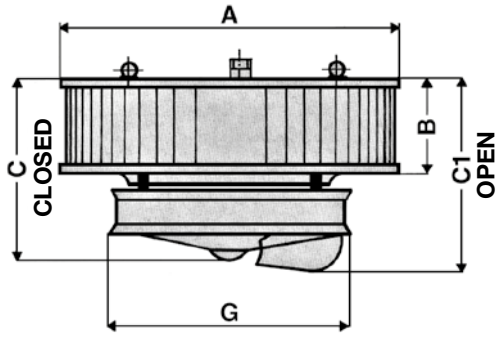
Made of eight separately adjustable large louvres, shaped so as to be able to cover the whole outlet area and therefore adaptable for minimum to maximum heights.
This diffuser allows the air to be directed more easily to the areas where it is required most, or conversely, if you do not require air to one particular corner you can close down one, two or three vanes and restrict the distribution.

Mounting heights and area of air distribution



Size	900 r.p.m. motor speed			
	45° louvres		Vertical louvres	
	H suggested	S diameter	H suggested	S diameter
	m	m	m	m
0	2,5÷4	10,5÷16,5	3,5÷5	6÷9
1	3÷4,5	12÷18	4÷5,5	7,5÷10,5
3	3,5÷5,5	15÷22,5	5÷7	9÷13,5
4	3,5÷6	15÷24	5,5÷8	10,5÷15
5	4÷6,5	16,5÷25,5	5,5÷8,5	10,5÷15
6	4÷8	16,5÷28,5	6÷10	12÷18
7	4÷8	16,5÷28,5	6÷10	12÷18
8	5÷11	18÷31,5	6,5÷14	13,5÷19,5
9	5÷11	18÷33	6,5÷14	13,5÷21

Dimensions, weight, water content



Size	Dimensions						Weight	Water content
	A	B	C	C1	G	Connections		
	mm	mm	mm	mm	mm	ø	kg	litres
0	680	180	430	560	560	1 ¼"	31	1,2
1	780	180	430	560	560	1 ¼"	36	1,3
3	880	280	530	700	660	1 ½"	52	2,4
4	880	380	630	760	660	1 ½"	58	3,2
5	1080	380	630	870	760	2"	75	4,3
6	1080	455	705	945	760	2"	85	5,2
7	1080	555	805	1045	760	2"	95	5,9
8	1080	555	815	1055	760	2"	97	5,9
9	1080	605	865	1105	760	2"	106	6,5

TECHNICAL SPECIFICATIONS

Size	Model	Noise level at 5 m (*) dB(A)		Air flow m^3/h		Heating Water temperature 85/70 °C - Entering air temperature 15 °C			
						W		Leaving air temp. °C	
		930 r.p.m.	800 r.p.m.	930 r.p.m.	800 r.p.m.	930 r.p.m.	800 r.p.m.	930 r.p.m.	800 r.p.m.
0	**P.007**	48	46	2000	1400	17600	15100	41	47
1	**P.107**	52	49	2400	1680	20400	17400	40	46
3	**P.311**	55	52	4400	3080	35300	30000	38	44
4	**P.415**	56	53	5700	4000	46700	39600	39	44
5	**P.515**	63	58	7100	4970	57100	48500	39	44
6	**P.618**	64	59	9000	6300	72200	61400	38	44
7	**P.722**	65	60	9900	6930	85600	72700	40	46
8	**P.822**	65	60	11000	7700	99500	84500	43	48
9	**P.924**	66	61	12000	8400	106700	90700	42	47

Size	Model	Noise level at 5 m (*) dB(A)		Air flow m^3/h		Cooling Relative humidity 55% Water temperature 11/15 °C - Entering air temperature 28 °C W	
		930 r.p.m.	800 r.p.m.	930 r.p.m.	800 r.p.m.	930 r.p.m.	800 r.p.m.
0	**P.007**	48	46	2000	1400	3100	2700
1	**P.107**	52	49	2400	1680	4000	3500
3	**P.311**	55	52	4400	3080	7500	6600
4	**P.415**	56	53	5700	4000	10900	9500
5	**P.515**	63	58	7100	4970	13600	11900
6	**P.618**	64	59	9000	6300	17200	15000
7	**P.722**	65	60	9900	6930	18900	16500
8	**P.822**	65	60	11000	7700	22000	19000
9	**P.924**	66	61	12000	8400	23700	20600

(*) = The sound pressure levels dB(A) are measured at a distance of 5 m, directional factor Q = 2, compliant with the EN 3744 standard.

Janus ECM

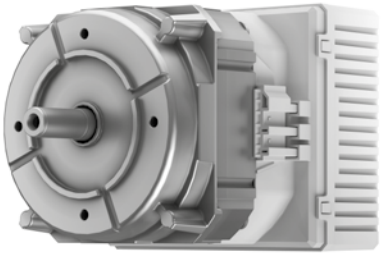
Air conditioner unit

Janus ECM units allow to cool economically the industrial, commercial and sporting facilities, transforming a traditional heating system using unit heaters into a system that can also be used in summer months, significantly improving the working conditions.

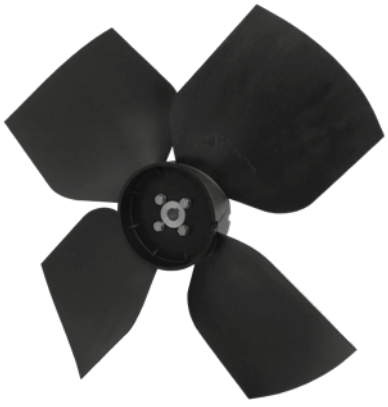
Janus ECM units are equipped with a synchronous permanent magnet brushless electronic motor and inverter board.

The control board, the 0-10 V signal generator, the valves and other accessories are available on demand for the installation.
The Janus ECM units are made in 4 sizes, each one with 3 and 4 row coils (a total of 8 models) with heating emissions from 7 to 71 kW (with water to 65/55 °C) and cooling emissions from 4 to 27 kW (with water to 7/12 °C).

Electronic motor



Helicoidal fan



TECHNICAL CHARACTERISTICS

- **Casing.** Made of galvanized prepainted 1 mm thick steel finished in a light grey colour RAL 9002. The use of steel with 200 g/m^2 (according to Euronorm 142 - 79) and prepainting guarantees a perfect finish and superior protection against corrosion.

- **Coil.** The coils (3 or 4 rows) are made of the highest quality copper tube. The fins are pressed from aluminium sheet. The heat exchanger is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.

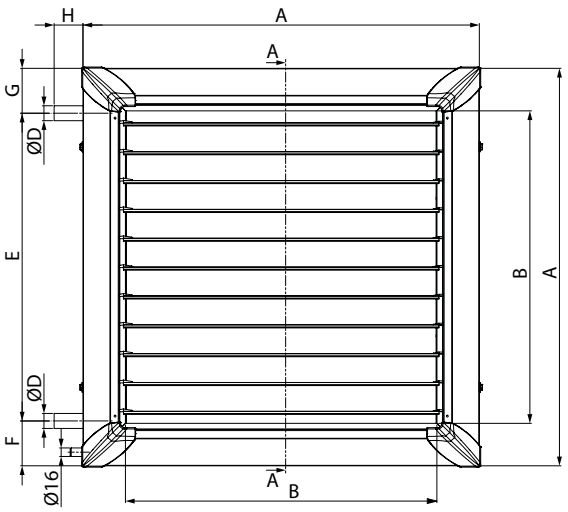
- **Condensate collection tray**, fitted inside the unit.

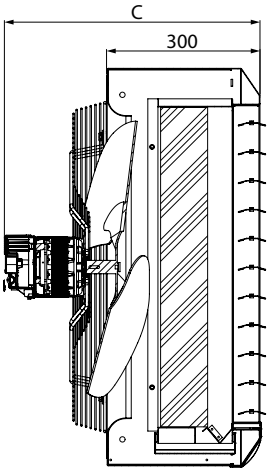
- **Electronic motor**, single phase permanent magnet brushless electronic motor, IP 44 protection and class B insulation. It is controlled with reconstructed current according to a sinusoidal wave.
  The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a switching system, it generates a three-phase frequency modulated, wave form power supply.
  The electric power supply required for the machine is therefore single-phase with voltage of 230 - 240 V and frequency of 50 - 60 Hz.

- **Helicoidal fan.** The fan, made of plastic material with glass reinforced plastic for the sizes 2-4-6 and of aluminium only for the size 9, has a high-quality profile that provides the maximum air flow rate with the minimum energy consumption. The finger proof guard is painted with electroplating treatment, that ensures more protection against corrosion.

- **Electric fan support.** The finger proof guard with four radial arms acts as the main support and fixing frame made of galvanized steel.

- **Louvres.** Made of a profiled prepainted steel sheet with a design that allows excellent direction of air flow.





Model		F-ECM 2	F-ECM 4	F-ECM 6	F-ECM 9
A	mm	526	634	742	1010
B	mm	390	498	606	874
C	mm	491	491	491	575
ØD	"	1	1	1	1¼
E	mm	376	476	576	818
F	mm	78	76	83	90
G	mm	72	82	83	102
H	mm	55	55	55	63

Weight

Model		F-ECM 23	F-ECM 24	F-ECM 43	F-ECM 44	F-ECM 63	F-ECM 64	F-ECM 93	F-ECM 94
Weight	kg	24,3	25,3	30,7	32,2	38,7	40,7	73,5	77,5

Water content

Model		F-ECM 23	F-ECM 24	F-ECM 43	F-ECM 44	F-ECM 63	F-ECM 64	F-ECM 93	F-ECM 94
Water coil content	l	1,7	2,2	2,7	3,4	4,0	5,1	7,6	9,8

Cooling mode

Entering air temperature: 28 °C - Relative humidity: 55 %

Model		F-ECM 23			F-ECM 24		
Inverter power		1	2	4	1	2	4
Speed	rpm	500	600	800	500	600	800
Air flow	m^3/h	700	865	1175	635	785	1070
Air throw	m	5,0	5,5	6,5	4,5	5,0	6,0
WT 7/12°C - ΔT=5°C Cooling total emission	kW	3,53	3,96	4,65	4,08	4,64	5,59
WT 7/12°C - ΔT=5°C Cooling sensible emission	kW	2,31	2,66	3,25	2,57	2,98	3,71
WT 7/12°C - ΔT=5°C Leaving air temperature	°C	17,90	18,60	19,60	15,60	16,40	17,40
Motor power input	W	17,0	22,0	42,0	17,0	22,0	42,0
Sound power (Lw)	dB(A)	48,0	52,5	61,5	48,0	52,5	61,5
Sound pressure (Lp) (1)	dB(A)	26,0	30,5	39,5	26,0	30,5	39,5

Model		F-ECM 43			F-ECM 44		
Inverter power		1	2	4	1	2	4
Speed	rpm	500	600	800	500	600	800
Air flow	m^3/h	1110	1345	1825	1010	1225	1660
Air throw	m	6,5	7,5	9,0	6,0	7,0	8,5
WT 7/12°C - ΔT=5°C Cooling total emission	kW	6,21	6,90	8,11	7,19	8,11	9,71
WT 7/12°C - ΔT=5°C Cooling sensible emission	kW	3,99	4,53	5,52	4,41	5,06	6,25
WT 7/12°C - ΔT=5°C Leaving air temperature	°C	17,00	17,70	18,70	14,70	15,40	16,40
Motor power input	W	19,0	29,0	63,0	19,0	29,0	63,0
Sound power (Lw)	dB(A)	53,5	58,5	66,5	53,5	58,5	66,5
Sound pressure (Lp) (1)	dB(A)	31,5	36,5	44,5	31,5	36,5	44,5

Model		F-ECM 63			F-ECM 64		
Inverter power		1	2	4	1	2	4
Speed	rpm	500	600	800	500	600	800
Air flow	m^3/h	1670	2035	2760	1520	1850	2510
Air throw	m	6,5	8,0	10,5	6,0	7,5	9,5
WT 7/12°C - ΔT=5°C Cooling total emission	kW	9,74	10,90	12,84	11,10	12,60	15,12
WT 7/12°C - ΔT=5°C Cooling sensible emission	kW	6,14	7,01	8,54	6,74	7,77	9,61
WT 7/12°C - ΔT=5°C Leaving air temperature	°C	16,70	17,50	18,50	14,40	15,10	16,30
Motor power input	W	29,0	43,0	99,0	29,0	43,0	99,0
Sound power (Lw)	dB(A)	57,5	62,5	70,5	57,5	62,5	70,5
Sound pressure (Lp) (1)	dB(A)	35,5	40,5	48,5	35,5	40,5	48,5

Model		F-ECM 93			F-ECM 94		
Inverter power		1	2	4	1	2	4
Speed	rpm	600	635	710	600	635	710
Air flow	m^3/h	4760	5030	5620	4430	4700	5275
Air throw	m	13,0	14,0	16,5	11,0	12,5	15,0
WT 7/12°C - ΔT=5°C Cooling total emission	kW	21,06	21,70	22,90	24,93	25,72	27,42
WT 7/12°C - ΔT=5°C Cooling sensible emission	kW	14,20	14,74	15,79	16,17	16,81	18,17
WT 7/12°C - ΔT=5°C Leaving air temperature	°C	18,90	19,10	19,50	16,90	17,10	17,50
Motor power input	W	135,0	155,0	207,0	135,0	155,0	207,0
Sound power (Lw)	dB(A)	65,0	70,0	75,0	65,0	70,0	75,0
Sound pressure (Lp) (1)	dB(A)	43,0	48,0	53,0	43,0	48,0	53,0

(1) The sound pressure levels dB(A) are measured at a distance of 5 m, directional factor Q = 2, compliant with the EN 3744 standard
WT Water temperature

Heating mode

Entering air temperature: 15 °C

Model		F-ECM 23						F-ECM 24					
Inverter power		**1**	**2**	**4**	**6**	**8**	**10**	**1**	**2**	**4**	**6**	**8**	**10**
Speed	rpm	500	600	800	1010	1210	1300	500	600	800	1010	1210	1300
Air flow	m^3/h	700	865	1175	1485	1815	1960	635	785	1070	1350	1650	1780
Air throw	m	5,0	5,5	6,5	7,0	8,0	8,5	4,5	5,0	6,0	6,5	7,5	8,0
WT=65/55°C Heating emission	kW	6,88	7,99	9,88	11,49	13,05	13,60	7,49	8,80	11,06	13,02	14,93	15,60
WT=65/55°C Leaving air temperature	°C	43,9	42,1	39,6	37,7	36,1	35,5	49,6	47,9	45,3	43,3	41,5	40,9
Motor power input	W	17,0	22,0	42,0	77,0	132,0	157,0	17,0	22,0	42,0	77,0	132,0	157,0
Sound power (Lw)	dB(A)	48,0	52,5	61,5	66,5	70,5	72,0	48,0	52,5	61,5	66,5	70,5	72,0
Sound pressure (Lp) (1)	dB(A)	26,0	30,5	39,5	44,5	48,5	50,0	26,0	30,5	39,5	44,5	48,5	50,0

Model		F-ECM 43						F-ECM 44					
Inverter power		**1**	**2**	**4**	**6**	**8**	**10**	**1**	**2**	**4**	**6**	**8**	**10**
Speed	rpm	500	600	800	1010	1210	1300	500	600	800	1010	1210	1300
Air flow	m^3/h	1110	1345	1825	2310	2765	2980	1010	1225	1660	2100	2515	2710
Air throw	m	6,5	7,5	9,0	11,0	12,5	13,0	6,0	7,0	8,5	10,0	11,5	12,0
WT=65/55°C Heating emission	kW	11,12	12,73	15,67	18,32	20,60	21,56	12,13	14,03	17,55	20,79	23,58	24,76
WT=65/55°C Leaving air temperature	°C	44,3	42,7	40,2	38,3	36,8	36,2	50,1	48,6	46,1	44,1	42,4	41,8
Motor power input	W	19,0	29,0	63,0	119,0	192,0	232,0	19,0	29,0	63,0	119,0	192,0	232,0
Sound power (Lw)	dB(A)	53,5	58,5	66,5	72,5	77,0	79,0	53,5	58,5	66,5	72,5	77,0	79,0
Sound pressure (Lp) (1)	dB(A)	31,5	36,5	44,5	50,5	55,0	57,0	31,5	36,5	44,5	50,5	55,0	57,0

Model		F-ECM 63						F-ECM 64					
Inverter power		**1**	**2**	**4**	**6**	**8**	**10**	**1**	**2**	**4**	**6**	**8**	**10**
Speed	rpm	500	600	800	1010	1210	1300	500	600	800	1010	1210	1300
Air flow	m^3/h	1670	2035	2760	3500	4200	4530	1520	1850	2510	3180	3820	4120
Air throw	m	6,5	8,0	10,5	13,0	15,5	16,5	6,0	7,5	9,5	12,0	14,5	15,5
WT=65/55°C Heating emission	kW	16,85	19,41	23,91	28,01	31,48	33,01	18,32	21,31	26,07	31,67	35,95	37,77
WT=65/55°C Leaving air temperature	°C	44,5	42,9	40,4	38,4	36,9	36,3	50,3	48,7	46,2	44,1	42,5	41,8
Motor power input	W	29,0	43,0	99,0	195,0	322,0	393,0	29,0	43,0	99,0	195,0	322,0	393,0
Sound power (Lw)	dB(A)	57,5	62,5	70,5	76,5	81,0	83,0	57,5	62,5	70,5	76,5	81,0	83,0
Sound pressure (Lp) (1)	dB(A)	35,5	40,5	48,5	54,5	59,0	61,0	35,5	40,5	48,5	54,5	59,0	61,0

Model		F-ECM 93						F-ECM 94					
Inverter power		**1**	**2**	**4**	**6**	**8**	**10**	**1**	**2**	**4**	**6**	**8**	**10**
Speed	rpm	600	635	710	785	860	950	600	635	710	785	860	950
Air flow	m^3/h	4760	5030	5620	6210	6790	7440	4430	4700	5275	5855	6430	7085
Air throw	m	13,0	14,0	16,5	18,5	21,0	23,0	11,0	12,5	15,0	17,5	19,5	22,0
WT=65/55°C Heating emission	kW	15,96	47,73	51,50	55,04	58,37	61,97	51,02	53,31	58,03	62,55	66,81	71,49
WT=65/55°C Leaving air temperature	°C	43,2	42,8	41,8	40,9	40,1	39,4	48,7	48,2	47,1	46,2	45,4	44,5
Motor power input	W	135,0	155,0	207,0	271,0	345,0	450,0	135,0	155,0	207,0	271,0	345,0	450,0
Sound power (Lw)	dB(A)	65,0	70,0	75,0	79,0	81,0	84,0	65,0	70,0	75,0	79,0	81,0	84,0
Sound pressure (Lp) (1)	dB(A)	43,0	48,0	53,0	57,0	59,0	62,0	43,0	48,0	53,0	57,0	59,0	62,0

(1) The sound pressure levels dB(A) are measured at a distance of 5 m, directional factor Q = 2, compliant with the EN 3744 standard
WT Water temperature

VA2V **2 way water valve**

Components:
- one 2 way valve
- one ON-OFF 230 V actuator

2 way water valve

Actuator

VA3V **3 way water valve**

Components:
- one 3 way valve
- one ON-OFF 230 V actuator

3 way water valve

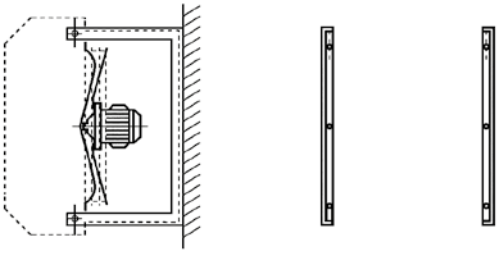
Actuator

KIT-VA **Extension kit**

To order mandatory for cooling.

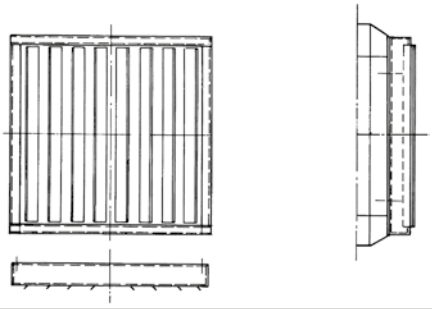
AMP **Wall bracket for unit heater**

Horizontal discharge



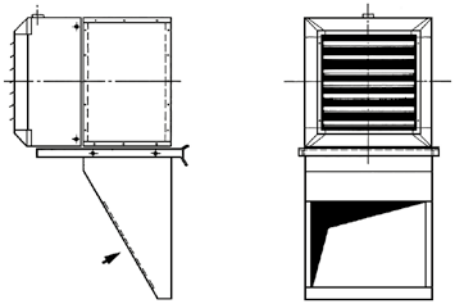
AD **Four way diffuser**

To be used when discharging downflow to create a 4 way discharge pattern



ARC **ARC air box (with brackets)**

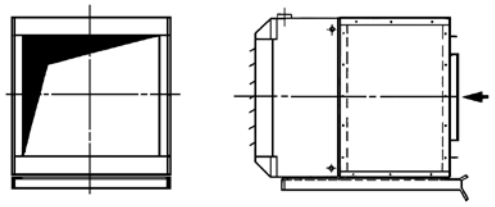
Simple intake hood fitted underneath.
Wall brackets included.
Prepainted steel thickness 1 mm



AE

AE air box

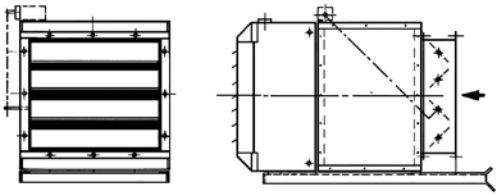
Prepainted steel thickness 1 mm



AES

AES air box with motorized damper

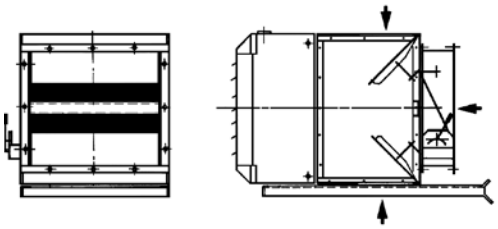
Prepainted steel thickness 1 mm



AM

AM air box with manually controlled dampers, for internal/external air mixing

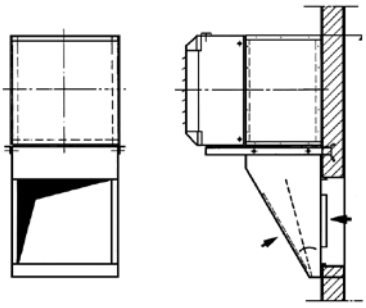
Prepainted steel thickness 1 mm



AMC

AMC air box with damper, for internal/external air mixing

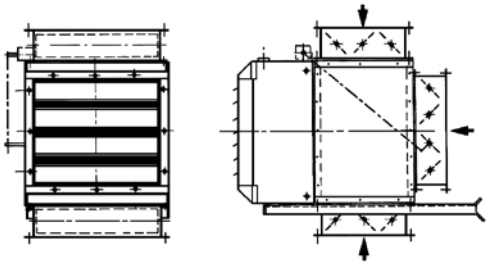
Wall brackets included
Prepainted steel thickness 1 mm



AMS

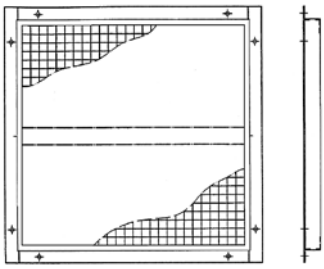
AMS air box for internal/external air mixing, with damper and fins manually controlled (they can be motorized on demand)

Prepainted steel thickness 1 mm



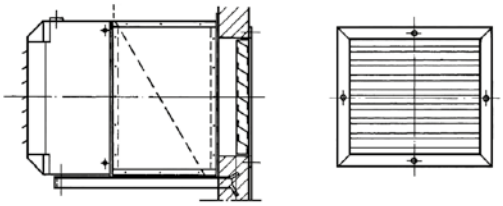
APP

Ball protection grid



AG **Rainproof grid for external wall air box**

Prepainted steel thickness 1 mm



AP **Intermediate section for ARC and AMC air boxes**
Ducts of 500 mm

Prepainted steel thickness 1 mm

Controls

WM-UH-ECM2 **Control board**

LC-P220 **0-10 V / 230 V signal generator**

NTC-10K-WM **Remote probe for WM-UH-ECM2 control board**

WM-S-ECM **0-10 V control with display**

to be mounted on the wall or to be installed on a 503 wall box

Elegant ECM

Ceiling Air Conditioner

Elegant ECM air conditioners allow to heat and cool very economically small and medium areas, like shops, show rooms, workshops, supermarkets.

The range is made up of 16 models:

- RE-ECM version for heating only, is made up of **8 models**

- PE-ECM version for heating and cooling, is made up of **4 models.**

- SPE-ECM version for heating and cooling, without condensate pump, provides **4 models.**

The **Elegant ECM** series uses an innovative brushless synchronous permanent magnet electric motor controlled by an inverter card that is directly installed on the unit.

The intake of the air is from the bottom side of the unit and the air supply is from the 4 lateral grids which have individually controllable louvres for the best distribution of the air.

The condensate drain is made through an electronically controlled micro-pump, supplied on every standard PE–ECM model.

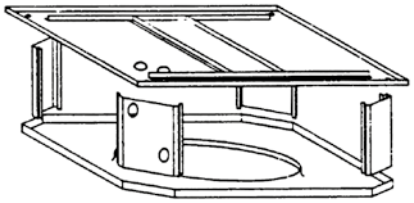
Different remote controls of the air flow and of the room temperature are available and it is possible to control up to 8 units with only one remote control.

All the **Elegant ECM** units can be supplied with a wide range of controls using the **Modbus RTU - RS 485** communication protocol.

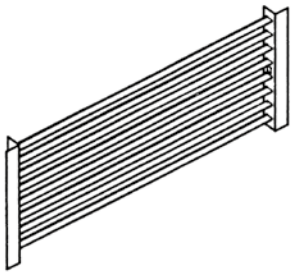
Beside the low installation and running cost, the **Elegant ECM Sabiana** air conditioners offer the following advantages:

- they take up a small amount of the valuable space in the room, there is not any ducting system and the walls are free.
- they are versatile and provide flexibility of installation: also where there is no false ceiling it is possible to distribute the air evenly.
- they provide easy control and are easily installed.

Casing
Made of steel on both top and bottom sections and it is then finished with an epoxy-polyester powder coating dried at 180 °C, in white RAL 9016.
The lower casing is also the condensate collection tray.
The components are assembled with screws and so it is possible to quickly dismantle it for inspection when needed.



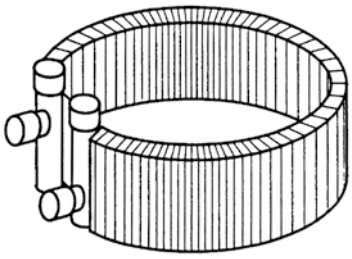
Outlet grids
The discharge of the air is obtained through 4 grids on the 4 lateral sides. They are comprised by a frame in which the louvres are individually adjustable. It is very easy to take off these grids, allowing for easy maintenance of the coil and of the condensate tray.



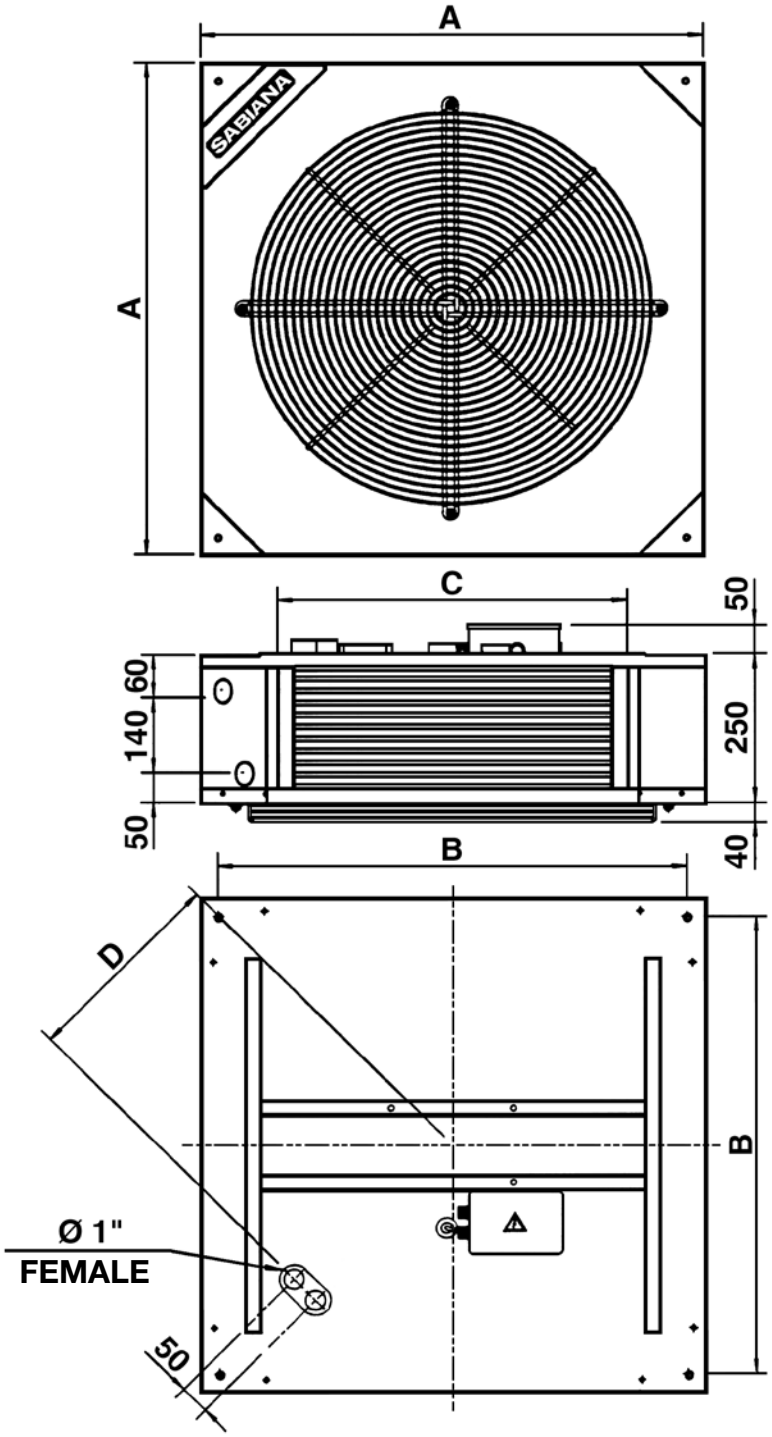
Electronic motor
Three phase permanent magnet brushless electronic motor.
The inverter board that controls the motor operation is powered by 230 Volt, single-phase and it generates a frequency modulated wave form power supply. The electric power supply required for the machine is therefore single-phase with voltage of 230-240V and frequency of 50-60Hz.

Helicoidal fan
The fan is made with statically and dynamically balanced plastic blades. Its rational high-capacity profile provides the maximum air volume with the minimum energy consumption. The fan hub is secured onto the motor shaft and it is protected by a safety guard.

Coil
The coil is constructed of copper tubes with aluminium fins and steel headers.
The supply and return connections have a female threading, 1" diameter, and they allow the connection either vertically from above or horizontally from a side.
The coil is supplied in two versions: with 1 row and with 2 rows.
The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.



Condensate micro-pump
The PE–ECM model for cooling is always supplied with an integral micropump (discharge head 3m, water flow 6l/h). The pump is installed in the condensate collected tray. This pump controls the level of the condensate collected in the tray and drain it when necessary.



with 1 row coil (only heating)

Model		RE-ECM			
		11	21	31	41
Dimensions (mm)	A	600	750	750	830
	B	540	690	690	770
	C	330	480	480	560
	D	220	287	300	344
Weight (kg)		26	31	32	38
Water content (Liters)		0,8	1,1	1,1	1,3

with 2 row coil (heating and cooling)

Model		RE-ECM / PE-ECM / SPE-ECM			
		12	22	32	42
Dimensions (mm)	A	600	750	750	830
	B	540	690	690	770
	C	330	480	480	560
	D	220	287	300	344
Weight (kg)		28	34	35	40
Water content (Liters)		1,8	2,4	2,4	2,7

RE-ECM units (heating only)

The following standard rating conditions are used:
HEATING (winter mode)
Entering air temperature: +20 °C
Water temperature: +70/60 °C

Model		RE-ECM 11						RE-ECM 12					
Inverter Power **(V)**		**5**	**6**	**7**	**8**	**9**	**10**	**5**	**6**	**7**	**8**	**9**	**10**
Air flow	m^3/h	1045	1265	1465	1635	1805	1890	1005	1215	1410	1570	1735	1820
Heating	kW	5,88	6,60	7,20	7,67	8,14	8,36	9,56	10,88	12,01	12,88	13,74	14,15
Dp Heating	kPa	11,2	13,8	16,2	18,1	20,2	21,1	6,90	8,80	10,5	11,9	13,3	14,1
Sound power Lw	dB(A)	44	48	52	54	56	57	44	48	52	54	56	57
Sound pressure Lp **(*)**	dB(A)	35	39	43	45	47	48	35	39	43	45	47	48
Sound pressure Lp **(**)**	dB(A)	31	35	39	41	43	44	31	35	39	41	43	44
Fan	W	16	20	28	36	53	70	16	20	28	36	53	70

Model		RE-ECM 21						RE-ECM 22					
Inverter Power **(V)**		**5**	**6**	**7**	**8**	**9**	**10**	**5**	**6**	**7**	**8**	**9**	**10**
Air flow	m^3/h	1380	1645	1925	2175	2415	2600	1325	1580	1850	2090	2320	2500
Heating	kW	7,59	8,46	9,32	10,03	10,68	11,18	12,64	14,26	15,81	17,13	18,31	19,20
Dp Heating	kPa	7,9	9,6	11,4	13,0	14,6	15,9	13,0	16,2	19,5	22,5	25,4	27,7
Sound power Lw	dB(A)	48	51	54	57	60	62	48	51	54	57	60	62
Sound pressure Lp **(*)**	dB(A)	39	42	45	48	51	53	39	42	45	48	51	53
Sound pressure Lp **(**)**	dB(A)	35	38	41	44	47	49	35	38	41	44	47	49
Fan	W	23	30	38	48	65	80	23	30	38	48	65	80

Model		RE–ECM 31						RE–ECM 32					
Inverter Power **(V)**		**5**	**6**	**7**	**8**	**9**	**10**	**5**	**6**	**7**	**8**	**9**	**10**
Air flow	m^3/h	1880	2245	2560	2890	3140	3180	1810	2160	2460	2780	3020	3060
Heating	kW	8,70	9,71	10,50	11,29	11,85	11,95	14,97	16,80	18,24	19,68	20,71	20,89
Dp Heating	kPa	10,5	12,7	14,7	16,7	18,2	18,5	14,2	17,5	20,2	23,2	25,4	25,8
Sound power Lw	dB(A)	50	53	56	59	61	61	50	53	56	59	61	61
Sound pressure Lp **(*)**	dB(A)	41	44	47	50	52	52	41	44	47	50	52	52
Sound pressure Lp **(**)**	dB(A)	37	40	43	46	48	48	37	40	43	46	48	48
Fan	W	30	39	50	65	90	110	30	39	50	65	90	110

Model		RE-ECM 41						RE-ECM 42					
Inverter Power **(V)**		**5**	**6**	**7**	**8**	**9**	**10**	**5**	**6**	**7**	**8**	**9**	**10**
Air flow	m^3/h	2475	3090	3515	3995	4450	4680	2380	2970	3380	3840	4280	4500
Heating	kW	10,40	11,84	12,75	13,72	14,57	14,99	17,49	20,08	21,71	23,44	25,00	25,73
Dp Heating	kPa	6,4	8,1	9,2	10,5	11,7	12,4	4,8	6,2	7,1	8,2	9,2	9,7
Sound power Lw	dB(A)	47	51	54	57	59	60	47	51	54	57	59	60
Sound pressure Lp **(*)**	dB(A)	38	42	45	48	50	51	38	42	45	48	50	51
Sound pressure Lp **(**)**	dB(A)	34	38	41	44	46	47	34	38	41	44	46	47
Fan	W	40	65	100	125	155	174	40	65	100	125	155	174

(*) = Measurement performed at 3 meter from the source,
room volume of 500m^3, reverberation period of 2 s, directional factor Q=2 (hemisphere sound emission).
(**) = Measurement performed at 3 meter from the source,
room volume of 1500m^3, reverberation period of 2 s, directional factor Q=2 (hemisphere sound emission).

PE-ECM / SPE-ECM units (heating and cooling)

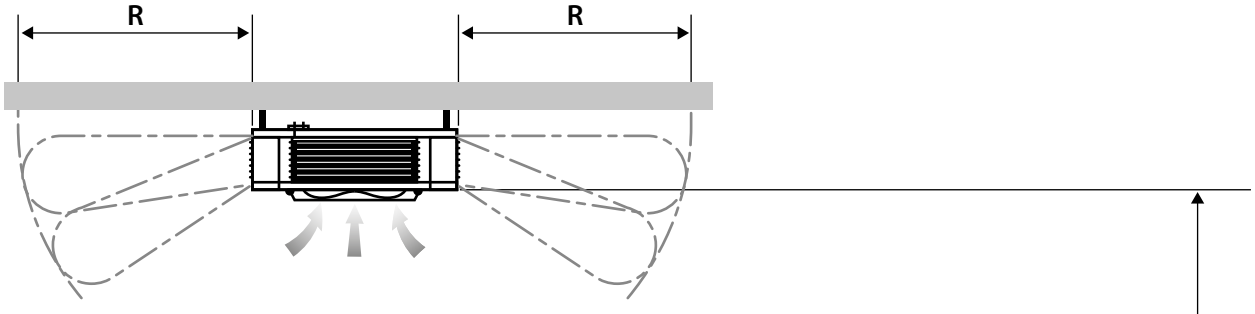
The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27 °C b.s. 50% U.R.
Water temperature: +7/12 °C uscita

HEATING (winter mode)
Entering air temperature: +20 °C
Water temperature: +70/60 °C

Model		PE-ECM / SPE-ECM 12						PE-ECM / SPE-ECM 22					
Inverter Power **(V)**		5	6	7	8	9	10	5	6	7	8	9	10
Air flow	m^3/h	1005	1215	1410	1570	1735	1820	1325	1580	1850	2090	2320	2500
Cooling total emission	kW	3,89	4,30	4,65	4,80	5,17	5,20	5,31	5,83	6,33	6,74	7,13	7,38
Cooling sensible emission	kW	3,14	3,58	3,98	4,23	4,61	4,71	4,14	4,68	5,22	5,68	6,12	6,44
Heating	kW	9,56	10,88	12,01	12,88	13,74	14,15	12,64	14,26	15,81	17,13	18,31	19,20
Dp Cooling	kPa	6,3	7,6	8,8	9,3	10,6	10,7	12,7	15,0	17,4	19,4	21,5	22,9
Dp Heating	kPa	6,9	8,8	10,5	11,9	13,3	14,1	13,0	16,2	19,5	22,5	25,4	27,7
Sound power Lw	dB(A)	44	48	52	54	56	57	48	51	54	57	60	62
Sound pressure Lp **(*)**	dB(A)	35	39	43	45	47	48	39	42	45	48	51	53
Sound pressure Lp **(**)**	dB(A)	31	35	39	41	43	44	35	38	41	44	47	49
Fan	W	16	20	28	36	53	70	23	30	38	48	65	80

Model		PE-ECM / SPE-ECM 32						PE-ECM / SPE-ECM 42					
Inverter Power **(V)**		5	6	7	8	9	10	5	6	7	8	9	10
Air flow	m^3/h	1810	2160	2460	2780	3020	3060	2380	2970	3380	3840	4280	4500
Cooling total emission	kW	6,43	7,01	7,51	7,99	8,41	8,52	7,19	8,09	8,84	9,32	9,83	10,07
Cooling sensible emission	kW	5,21	5,87	6,44	7,02	7,50	7,60	6,40	7,53	8,40	9,15	9,83	10,07
Heating	kW	14,97	16,80	18,24	19,68	20,71	20,89	17,49	20,08	21,71	23,44	25,00	25,73
Dp Cooling	kPa	16,3	19,0	21,5	24,1	26,4	27,0	7,6	9,4	11,0	12,1	13,4	14,0
Dp Heating	kPa	14,2	17,5	20,2	23,2	25,4	25,8	4,8	6,2	7,1	8,2	9,2	9,7
Sound power Lw	dB(A)	50	53	56	59	61	61	47	51	54	57	59	60
Sound pressure Lp **(*)**	dB(A)	41	44	47	50	52	52	38	42	45	48	50	51
Sound pressure Lp **(**)**	dB(A)	37	40	43	46	48	48	34	38	41	44	46	47
Fan	W	30	39	50	65	90	110	40	65	100	125	155	174

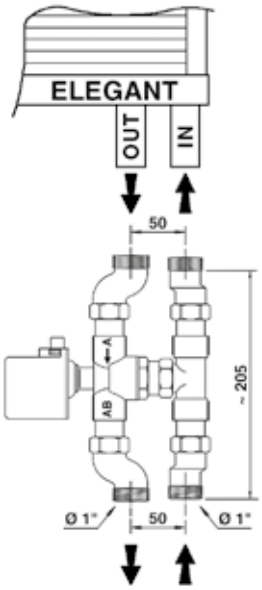


Model	High speed		Low speed	
	Maximum height (m)	Surface (m)	Maximum height (m)	Surface (m)
	H	R	H	R
1	3,5	3,5	3,0	2,5
2	3,5	3,8	3,0	2,6
3	4,0	4,0	3,5	3,0
4	4,5	4,5	4,0	3,5

3-way valve kit

Composed by:

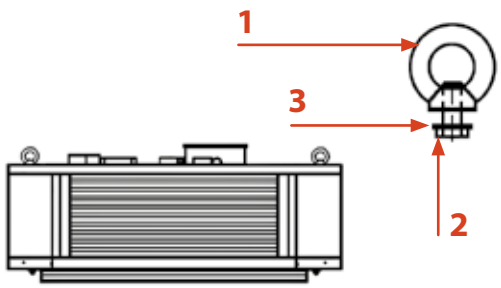
- one 3-way valve 3/4" Kvs 4,7
- one actuator
- pipe connections



Hanging brackets

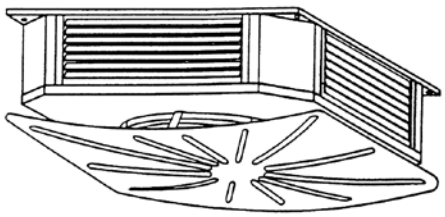
Composed by 4 eye bolts and screws.

1 Washer for screw M8
2 Screw M8 x 16
3 Eye bolt female M8



Cover panel

To be mounted on the fan guard.



Electronic wall controls

For each unit must be provided the ADC converter or the UPE-AU power unit for wall controls

WM-3V	3 speed control (to be used with ADC-M or ADC-S only)
WM-T	3 speed control with electronic thermostat and summer/winter switch (to be used with ADC-M or ADC-S only)
WM-TQR	3 speed control with electronic thermostat and centralized/manual summer/winter switch (to be used with ADC-M or ADC-S only)
WM-AU	Automatic speed control with electronic thermostat and summer/winter switch (to be used with UPEM-AU or UPE-AU only)
T-MB2	Wall control with LCD color display and WiFi (to be used with UPEM-AU or UPE-AU only)
T2T	Electromechanical thermostat with summer/winter switch (only for 2 pipe units) (to be used with ADC-M or ADC-S only)
ADC-M	ADC signal converter for wall controls fitted on the unit, for WM-3V, WM-T, WM-TQR and T2T controls
ADC-S	ADC signal converter for wall controls supplied with separate packaging, for WM-3V, WM-T, WM-TQR and T2T controls
UPEM-AU	UPE-AU power unit for WM-AU and T-MB remote controls, fitted on the unit
UPE-AU	UPE-AU power unit for WM-AU and T-MB remote controls, not fitted on the unit

Electronic controls for MBE boards

MBE-M	MBE electronic board fitted on the unit
MBE-S	MBE electronic board supplied with separate packaging
T-MB2	Wall control with LCD color display and WiFi (to be used with MBE board only)
PSM-DI	PSM-DI multifunction control panel (to be used with MBE board only)
T-DI	T-DI touch screen multifunction control panel (to be used with MBE board only)
SabWeb	Web gateway for Sabiana Cloud (to be used with MBE board only)

Sabianet management system for a network of Elegant ECM

Sabianet	Hardware/software supervisory system (to be used with MBE board only)
Router-S	Router for Sabianet (default) or for BMS systems not provided by Sabiana
SIOS	Relay output board for Sabianet

NOTE: for more information about Controls and for full list of main Accessories, please see the dedicated pages.

Meltemi
Door Curtain

The range of **Meltemi Sabiana** door curtains offers the maximum flexibility in the protection of doors and open access compartments.

The door curtains are available in the air ventilation version, with hot water coil and with electric resistance, the **3 different versions** are supplied in **35 different models** with lengths from 1125 mm to 2185 mm that are suitable for door heights from 2,5 m to 4,5 m in commercial installations.

Thanks to their modularity, the door curtain units **can be connected together** to give a continual air barrier of the desidered length to protect large doors.

Cabinet
It consists of cold galvanised steel plate panels painted with oven-dried epoxy powders, colour RAL 9003. The side closures are made of plastic.

Fan assembly

LU/LU-ECM Models: made up of plastic tangential fans installed on a rubber support with rolling bearing and coupled with the electric motor mounted on the structure side.
LC/LC-ECM/LI Models: it consists of double inlet centrifugal fans directly fitted on the motor shaft.

Electric motor

LU/LC/LI Models: single-phase motor with capacitor inserted permanently, automatic reset internal thermal protection, class of protection IP 20. Power supply 230V - 50Hz. Two speeds are available.
LU-ECM/LC-ECM Model: three phase permanent magnet brushless electronic motor that is controlled with reconstructed current according to a BLAC sinusoidal wave. The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a switching system, it generates a three-phase frequency modulated, wave form power supply. The electric power supply required for the unit is therefore single-phase 230 - 240 V and 50 - 60 Hz.

Coil (W versions with hot water)
The **"W series"** units are complete with a water coil (for heating only), made with copper pipes with aluminium fins bonded to the pipes by mechanical expansion.
LU/LU-ECM models are equipped with 1 row coil, **LC/LC-ECM/LI** models are equipped with 2 row coils. Maximum water temperature 80°C, maximum operating pressure 10 bar.

Electric resistance (E versions)
The **"E series"** units come with filament electric resistances supported by mica spacers, with external bearing structure made of galvanised sheet.

Electronic controls
The units come with integrated control system specifically designed for every type of operation (see Electronic controls page).

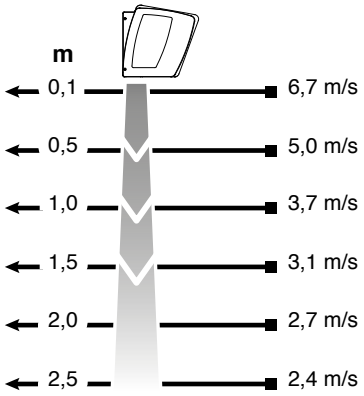
The **LU** series door curtains have been designed for installation **near small entrances of offices and commercial environments**.

The unit comes with integrated control system specifically designed for every type of operation:

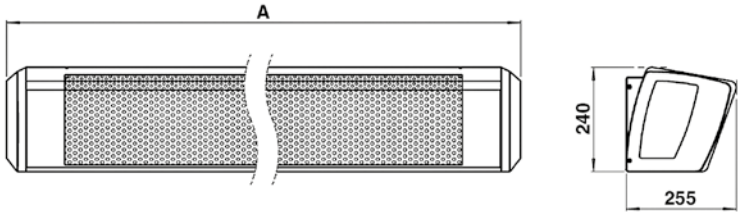
LU-A: air ventilation only, it is equipped with a control located on board, which can be easily accessed from the bottom. This includes a step-by-step control button to switch the device on and off and select the air speed.

LU-W/E: operation with hot water or electric coil. It is equipped with a remote control system (supplied with the unit) or it can be combined with a wall mounted T-MB2 control with display (optional).

Recommended installation height: 2.5 metres
Installation: horizontal
Lengths available: 1 and 1.5 metres
Electric resistance:
LU-10E 3 kW 230V 1 Ph or 400V 3 Ph
LU-15E 6 kW 400V 3Ph
1 row hot water coil
Complete with electrical connection cable with Schuko CEE 7/7 plug



Dimensions, weigh, water content



Dimensions (mm)

Model	LU-10	LU-15
A	1144	1644

Water content (litres)

Model	LU-10	LU-15
	0,65	0,95

Weight (kg)

	Weight with packaging		Weight without packaging	
Model	LU-10	LU-15	LU-10	LU-15
LU-A	16,4	23,1	14	20
LU-W	18,4	26,1	16	23
LU-E	18,4	26,1	16	23

ventilation only

Model		LU-10A		LU-15A	
Speed		**max**	**min**	**max**	**min**
Installation height	m	2,5	2,5	2,5	2,5
Length	mm	1144	1144	1644	1644
Air flow	m^3/h	1260	760	1900	1090
Sound pressure **(***)**	dB(A)	49	39	50	39
Motor voltage	V	230 V ~	230 V ~	230 V ~	230 V ~
Motor absorption	W	86	63	134	86
	A	0,37	0,27	0,58	0,39
Weight	kg	14	14	20	20

with hot water coil

Model		LU-10W		LU-15W	
Speed		**max**	**min**	**max**	**min**
Installation height	m	2,5	2,5	2,5	2,5
Length	mm	1144	1144	1644	1644
Air flow	m^3/h	1150	740	1750	1050
Heating **(*)**	kW	5,87	4,56	8,94	6,65
Heating **(**)**	kW	3,36	2,63	5,06	3,79
Sound pressure **(***)**	dB(A)	49	39	50	39
Motor voltage	V	230 V ~	230 V ~	230 V ~	230 V ~
Motor absorption	W	86	63	134	86
	A	0,37	0,27	0,58	0,39
Weight	kg	16	16	23	23

with electric resistance

Model		LU-10E-230		LU-10E-400		LU-15E	
Speed		**max**	**min**	**max**	**min**	**max**	**min**
Installation height	m	2,5	2,5	2,5	2,5	2,5	2,5
Length	mm	1144	1144	1144	1144	1644	1644
Air flow	m^3/h	1260	760	1260	760	1900	1090
Electric resistance - 1st stage	kW	2	2	2	2	3	3
Electric resistance - 2nd stage	kW	3	3	3	3	6	6
Sound pressure **(***)**	dB(A)	49	39	49	39	50	39
Motor voltage	V	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~
Electric resistance voltage	V	230 V ~	230 V ~	400 V 3 Ph	400 V 3 Ph	400 V 3 Ph	400 V 3 Ph
Motor absorption	W	86	63	86	63	134	86
	A	0,37	0,27	0,37	0,27	0,58	0,39
Electric resistance absorption – 1st stage	A	8,7	8,7	3,0	3,0	4,5	4,5
Electric resistance absorption – 2nd stage	A	13,1	13,1	4,5	4,5	9,0	9,0
Weight	kg	16	16	16	16	23	23

(*) = Air temperature 18 °C – Water temperature 80/60 °C.
(**) = Air temperature 18 °C – Water temperature 60/40 °C.
(***) = The sound pressure levels dB(A) are measured at a distance of 3 m, directional factor Q = 2, according to EN 3744..

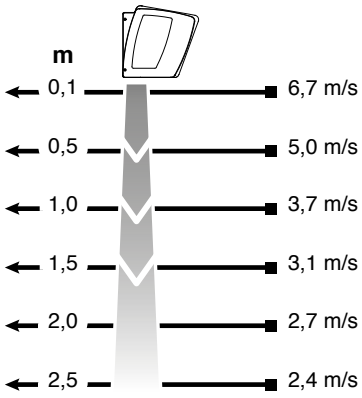
The **LU-ECM** series door curtains have been designed for installation **near small entrances of offices and commercial environments**.

The unit comes with integrated control system specifically designed for every type of operation:

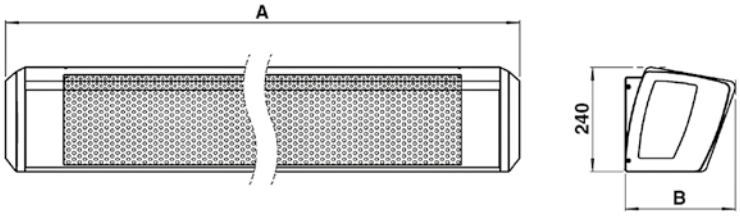
LU-ECM-A: air ventilation only. It is equipped with a remote control system (supplied with the unit) or it can be combined with a wall mounted T-MB2 control with display (optional).

LU-ECM-W/E: operation with hot water or electric coil. It is equipped with a remote control system (supplied with the unit) or it can be combined with a wall mounted T-MB2 control with display (optional).

Recommended installation height: 2,5 metri
Installation: horizontal
Lengths available: 1 and 1.5 and 2 metres
Electric resistance:
LU-ECM-10E 3 kW 230V 1 Ph or 400V 3 Ph
LU-ECM-15E / LU-ECM-20E 6 kW 400V 3Ph
1 row hot water coil
Complete with electrical connection cable with Schuko CEE 7/7 plug



Dimension, weight, water content



Dimension (mm)

Model	LU-ECM-10	LU-ECM-15	LU-ECM-20
A	1144	1644	2150
B	255	255	275

Water content (litres)

Model	LU-ECM-10	LU-ECM-15	LU-ECM-20
	0,65	0,95	1,30

Weight (kg)

	Weight with packaging			Weight without packaging		
Model	LU-ECM-10	LU-ECM-15	LU-ECM-20	LU-ECM-10	LU-ECM-15	LU-ECM-20
LU-A	16,4	23,1	33,0	14	20	29
LU-W	18,4	26,1	36,0	16	23	32
LU-E	18,4	26,1	37,0	16	23	33

ventilation only

Model		LU-ECM-10A		LU-ECM-15A		LU-ECM-20A	
Speed		**max**	**min**	**max**	**min**	**max**	**min**
Installation height	m	2,5	2,5	2,5	2,5	2,5	2,5
Length	mm	1144	1144	1644	1644	2150	2150
Air flow	m^3/h	1260	760	1900	1090	2560	1450
Sound pressure **(***)**	dB(A)	49	39	50	39	52	41
Motor voltage	V	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~
Motor absorption	W	64,8	25,5	113,0	49,8	165,0	53,5
	A	0,55	0,22	0,92	0,42	1,30	0,46
Weight	kg	14	14	20	20	29	29

with hot water coil

Model		LU-ECM-10W		LU-ECM-15W		LU-ECM-20W	
Speed		**max**	**min**	**max**	**min**	**max**	**min**
Installation height	m	2,5	2,5	2,5	2,5	2,5	2,5
Length	mm	1144	1144	1644	1644	2150	2150
Air flow	m^3/h	1150	740	1750	1050	2250	1310
Heating **(*)**	kW	5,87	4,56	8,94	6,65	12,19	8,81
Heating **(**)**	kW	3,36	2,63	5,06	3,79	7,02	5,11
Sound pressure **(***)**	dB(A)	49	39	50	39	52	41
Motor voltage	V	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~
Motor absorption	W	46,9	19,8	81,2	36,4	120,5	38,5
	A	0,39	0,18	0,69	0,32	0,97	0,35
Weight	kg	16	16	23	23	32	32

with electric resistance

Model		LU-ECM-10E-230		LU-ECM-10E-400		LU-ECM-15E		LU-ECM-20E	
Speed		**max**	**min**	**max**	**min**	**max**	**min**	**max**	**min**
Installation height	m	2,5	2,5	2,5	2,5	2,5	2,5	2,5	2,5
Length	mm	1144	1144	1144	1144	1644	1644	2150	2150
Air flow	m^3/h	1260	760	1260	760	1900	1090	2310	1305
Electric resistance - 1st stage	kW	2	2	2	2	3	3	3	3
Electric resistance - 2nd stage	kW	3	3	3	3	6	6	6	6
Sound pressure **(***)**	dB(A)	49	39	49	39	50	39	52	41
Motor voltage	V	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~
Electric resistance voltage	V	230 V ~	230 V ~	400 V 3 Ph	400 V 3 Ph	400 V 3 Ph	400 V 3 Ph	400 V 3 Ph	400 V 3 Ph
Motor absorption	W	52	22	52	22	89	40	132	42,4
	A	0,43	0,19	0,43	0,19	0,75	0,35	1,06	0,39
Electric resistance absorption – 1st stage	A	8,7	8,7	3,0	3,0	4,5	4,5	4,5	4,5
Electric resistance absorption – 2nd stage	A	13,1	13,1	4,5	4,5	9,0	9,0	9,0	9,0
Weight	kg	16	16	16	16	23	23	33	33

(*) = Air temperature 18 °C – Water temperature 80/60 °C.
(**) = Air temperature 18 °C – Water temperature 60/40 °C.
(***) = The sound pressure levels dB(A) are measured at a distance of 3 m, directional factor Q = 2, according to EN 3744.

Meltemi | LC MODEL

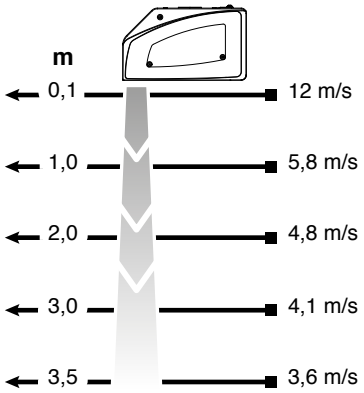
The **LC** door curtains are intended to be installed **near entrances of shops or shopping centres**.

The unit comes with integrated control system specifically designed for every type of operation:

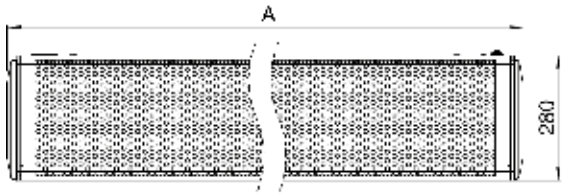
LC-A: air ventilation only, it is provided with wall mounted remote control. The control allows to switch the door barrier on and off and to set the speed required (high or low) by pressing a step-by-step button.

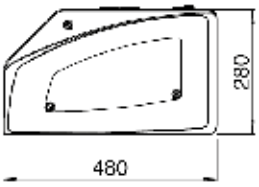
LC-W/E: operation with hot water or electric coil. The unit comes with remote control with T-MB2 wall mounted display.

Recommended installation height: 3.5 metres
Installation:: horizontal
Lengths available: 1, 1.5, and 2 metres
Electric resistance:
LC-10E 8 kW 400V 3Ph
LC-15E 12 kW 400V 3Ph
LC-20E 16 kW 400V 3Ph
2 row hot water coil



Dimension, weight, water content





Dimension (mm)

Model	LC-10	LC-15	LC-20
A	1125	1625	2160

Water content (litres)

Model	LC-10	LC-15	LC-20
	1,40	2,10	2,85

Weight (kg)

	Weight with packaging			Weight without packaging		
Model	LC-10	LC-15	LC-20	LC-10	LC-15	LC-20
LC-A	34,5	45,6	78,5	31	41	60
LC-W	39,5	51,6	86,5	36	47	68
LC-E	37,5	49,6	83,5	34	45	65

ventilation only

Model		LC-10A		LC-15A		LC-20A	
Speed		**max**	**min**	**max**	**min**	**max**	**min**
Installation height	m	3,5	3,5	3,5	3,5	3,5	3,5
Length	mm	1125	1125	1625	1625	2160	2160
Air flow	m^3/h	2100	1200	3150	1500	4200	2400
Sound pressure **(***)**	dB(A)	52	38	56	38	54	38
Motor voltage	V	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~
Motor absorption	W	330	230	540	200	660	460
	A	1,57	1,15	2,35	1,00	3,14	2,30
Weight	kg	31	31	41	41	60	60

with hot water coil

Model		LC-10W		LC-15W		LC-20W	
Speed		**max**	**min**	**max**	**min**	**max**	**min**
Installation height	m	3,5	3,5	3,5	3,5	3,5	3,5
Length	mm	1125	1125	1625	1625	2160	2160
Air flow	m^3/h	1900	1100	3000	1500	4000	2200
Heating **(*)**	kW	18,46	12,44	27,59	17,49	38,59	26,21
Heating **(**)**	kW	10,29	7,07	15,51	10,04	22,26	15,34
Sound pressure **(***)**	dB(A)	52	38	56	38	54	38
Motor voltage	V	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~
Motor absorption	W	330	230	540	200	660	460
	A	1,57	1,15	2,35	1,00	3,14	2,30
Weight	kg	36	36	47	47	68	68

with electric resistance

Model		LC-10E		LC-15E		LC-20E	
Speed		**max**	**min**	**max**	**min**	**max**	**min**
Installation height	m	3,5	3,5	3,5	3,5	3,5	3,5
Length	mm	1125	1125	1625	1625	2160	2160
Air flow	m^3/h	2100	1200	3150	1500	4200	2400
Electric resistance - 1st stage	kW	4	4	6	6	8	8
Electric resistance - 2nd stage	kW	8	8	12	12	16	16
Sound pressure **(***)**	dB(A)	52	38	56	38	54	38
Motor voltage	V	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~
Electric resistance voltage	V	400 V 3 Ph	400 V 3 Ph	400 V 3 Ph	400 V 3 Ph	400 V 3 Ph	400 V 3 Ph
Motor absorption	W	330	230	540	200	660	460
	A	1,57	1,15	2,35	1,00	3,14	2,30
Electric resistance absorption – 1st stage	A	6	6	9	9	12	12
Electric resistance absorption – 2nd stage	A	12	12	18	18	24	24
Weight	kg	34	34	45	45	65	65

(*) = Air temperature 18 °C – Water temperature 80/60 °C.
(**) = Air temperature 18 °C – Water temperature 60/40 °C.
(***) = The sound pressure levels dB(A) are measured at a distance of 3 m, directional factor Q = 2, according to EN 3744.

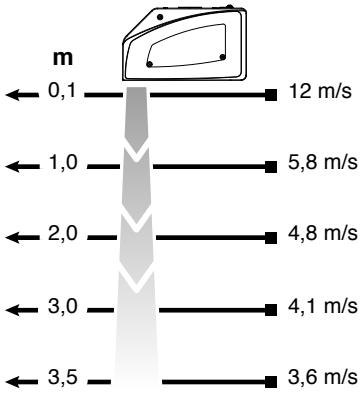
The **LC-ECM** door curtains are intended to be installed **near entrances of shops or shopping centres**.

The unit comes with integrated control system specifically designed for every type of operation:

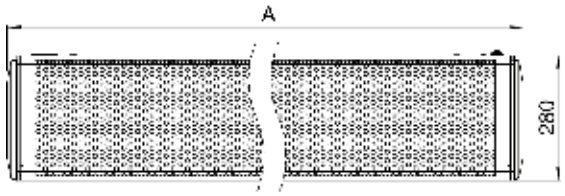
LC-ECM-A: air ventilation only. The unit comes with remote control with T-MB2 wall mounted display.

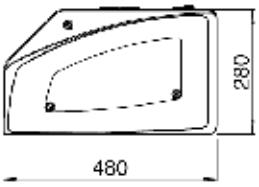
LC-ECM-W/E: operation with hot water or electric coil. The unit comes with remote control with T-MB2 wall mounted display.

Recommended installation height: 3.5 metres
Installation:: horizontal
Lengths available: 1, 1.5, and 2 metres
Electric resistance:
LC-ECM-10E 8 kW 400V 3Ph
LC-ECM-15E 12 kW 400V 3Ph
LC-ECM-20E 16 kW 400V 3Ph
2 row hot water coil



Dimension, weight, water content





Dimension (mm)

Model	LC-ECM-10	LC-ECM-15	LC-ECM-20
A	1125	1625	2160

Water content (litres)

Model	LC-ECM-10	LC-ECM-15	LC-ECM-20
	1,40	2,10	2,85

Weight (kg)

	Weight with packaging			Weight without packaging		
Model	LC-ECM-10	LC-ECM-15	LC-ECM-20	LC-ECM-10	LC-ECM-15	LC-ECM-20
LC-ECM-A	34,5	45,6	78,5	31	41	60
LC-ECM-W	39,5	51,6	86,5	36	47	68
LC-ECM-E	37,5	49,6	83,5	34	45	65

ventilation only

Model		LC-ECM-10A		LC-ECM-15A		LC-ECM-20A	
Speed		**max**	**min**	**max**	**min**	**max**	**min**
Installation height	m	3,5	3,5	3,5	3,5	3,5	3,5
Length	mm	1125	1125	1625	1625	2160	2160
Air flow	m^3/h	2100	1280	3200	1650	4200	2500
Sound pressure **(***)**	dB(A)	52	38	56	38	54	38
Motor voltage	V	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~
Motor absorption	W	210	85	370	86	420	170
	A	1,60	0,70	1,68	0,40	3,20	1,40
Weight	kg	31	31	41	41	60	60

with hot water coil

Model		LC-ECM-10W		LC-ECM-15W		LC-ECM-20W	
Speed		**max**	**min**	**max**	**min**	**max**	**min**
Installation height	m	3,5	3,5	3,5	3,5	3,5	3,5
Length	mm	1125	1125	1625	1625	2160	2160
Air flow	m^3/h	1900	1150	3000	1600	4000	2300
Heating **(*)**	kW	18,46	12,44	27,59	17,49	38,59	26,21
Heating **(**)**	kW	10,29	7,07	15,51	10,04	22,26	15,34
Sound pressure **(***)**	dB(A)	52	38	56	38	54	38
Motor voltage	V	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~
Motor absorption	W	210	85	370	86	420	170
	A	1,60	0,70	1,68	0,40	3,20	1,40
Weight	kg	36	36	47	47	68	68

with electric resistance

Model		LC-ECM-10E		LC-ECM-15E		LC-ECM-20E	
Speed		**max**	**min**	**max**	**min**	**max**	**min**
Installation height	m	3,5	3,5	3,5	3,5	3,5	3,5
Length	mm	1125	1125	1625	1625	2160	2160
Air flow	m^3/h	2000	1150	3000	1625	4100	2300
Electric resistance - 1st stage	kW	4	4	6	6	8	8
Electric resistance - 2nd stage	kW	8	8	12	12	16	16
Sound pressure **(***)**	dB(A)	52	38	56	38	54	38
Motor voltage	V	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~
Electric resistance voltage	V	400 V 3 Ph	400 V 3 Ph	400 V 3 Ph	400 V 3 Ph	400 V 3 Ph	400 V 3 Ph
Motor absorption	W	210	85	370	86	420	170
	A	1,60	0,70	1,68	0,40	3,20	1,40
Electric resistance absorption – 1st stage	A	6	6	9	9	12	12
Electric resistance absorption – 2nd stage	A	12	12	18	18	24	24
Weight	kg	34	34	45	45	65	65

(*) = Air temperature 18 °C – Water temperature 80/60 °C.
(**) = Air temperature 18 °C – Water temperature 60/40 °C.
(***) = The sound pressure levels dB(A) are measured at a distance of 3 m, directional factor Q = 2, according to EN 3744.

Meltemi | LI MODEL

The **LI** door curtains are intended to be installed **near industrial entrances or doors**, i.e. wherever the installation height must be up to 4.5 metres (maximum).

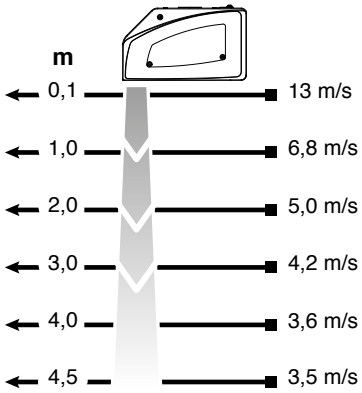
The unit comes with integrated control system specifically designed for every type of operation:

LI-A: air ventilation only, it is provided with wall mounted remote control. The control allows to switch the door barrier on and off and to set the speed required (high or low) by pressing a step-by-step button.

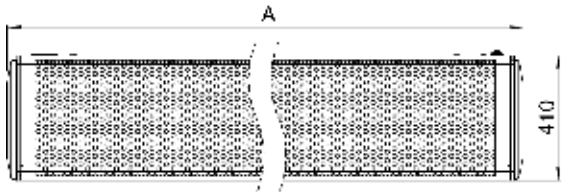
LI-W/E: operation with hot water or electric coil. The unit comes with remote control with T-MB2 wall mounted display.

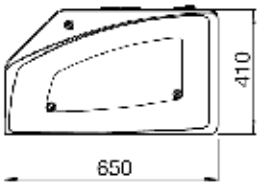
Recommended installation height: 4.5 metres
Installation: horizontal
Lengths available: 1, 1.5, and 2 metres
Electric resistance:
- **LI-10E** 11 kW 400V 3Ph
- **LI-15E** 18 kW 400V 3Ph
- **LI-20E** 22 kW 400V 3Ph

2 row hot water coil



Dimension, weight, water content





Dimension (mm)

Model	LI-10	LI-15	LI-20
A	1150	1650	2185

Water content (litres)

Model	LI-10	LI-15	LI-20
	1,65	2,55	3,40

Weight (kg)

	Weight with packaging			Weight without packaging		
Model	LI-10	LI-15	LI-20	LI-10	LI-15	LI-20
LI-A	45,9	67,1	110,0	42	62	88
LI-W	51,9	74,1	120,0	48	69	98
LI-E	50,9	73,1	118,0	47	68	96

ventilation only

Model		LI-10A		LI-15A		LI-20A	
Speed		**max**	**min**	**max**	**min**	**max**	**min**
Installation height	m	4,5	4,5	4,5	4,5	4,5	4,5
Length	mm	1150	1150	1650	1650	2185	2185
Air flow	m^3/h	3500	2600	5500	3250	7000	5200
Sound pressure **(***)**	dB(A)	58	49	58	50	60	51
Motor voltage	V	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~
Motor absorption	W	600	400	940	520	1200	800
	A	2,63	1,80	4,20	2,40	5,26	3,60
Weight	kg	42	42	62	62	88	88

with hot water coil

Model		LI-10W		LI-15W		LI-20W	
Speed		**max**	**min**	**max**	**min**	**max**	**min**
Installation height	m	4,5	4,5	4,5	4,5	4,5	4,5
Length	mm	1150	1150	1650	1650	2185	2185
Air flow	m^3/h	3500	2600	5500	3250	7000	5200
Heating **(*)**	kW	27,32	23,06	42,03	30,96	57,65	48,47
Heating **(**)**	kW	15,25	12,95	22,94	17,16	32,49	27,57
Sound pressure **(***)**	dB(A)	58	49	58	50	60	51
Motor voltage	V	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~
Motor absorption	W	600	400	940	520	1200	800
	A	2,63	1,80	4,20	2,40	5,26	3,60
Weight	kg	48	48	69	69	98	98

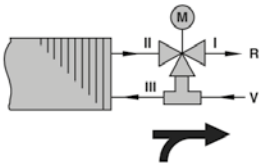
with electric resistance

Model		LI-10E		LI-15E		LI-20E	
Speed		**max**	**min**	**max**	**min**	**max**	**min**
Installation height	m	4,5	4,5	4,5	4,5	4,5	4,5
Length	mm	1150	1150	1650	1650	2185	2185
Air flow	m^3/h	3500	2600	5500	3250	7000	5200
Electric resistance - 1st stage	kW	7	7	12	12	14	14
Electric resistance - 2nd stage	kW	11	11	18	18	22	22
Sound pressure **(***)**	dB(A)	58	49	58	50	60	51
Motor voltage	V	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~	230 V ~
Electric resistance voltage	V	400 V 3 Ph	400 V 3 Ph	400 V 3 Ph	400 V 3 Ph	400 V 3 Ph	400 V 3 Ph
Motor absorption	W	600	400	940	520	1200	800
	A	2,63	1,80	4,20	2,40	5,26	3,60
Electric resistance absorption – 1st stage	A	10,2	10,2	17,5	17,5	20,5	20,5
Electric resistance absorption – 2nd stage	A	16,0	16,0	26,1	26,1	32,0	32,0
Weight	kg	47	47	68	68	96	96

(*) = Air temperature 18 °C – Water temperature 80/60 °C.
(**) = Air temperature 18 °C – Water temperature 60/40 °C.
(***) = The sound pressure levels dB(A) are measured at a distance of 3 m, directional factor Q = 2, according to EN 3744.

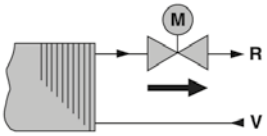
3 way valve

Three way ON-OFF valves with electric control.



2 way valve

Two way ON-OFF valves with electric control.

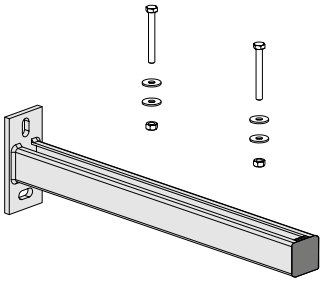


DSC **Door contact sensor kit**

As soon as the door is open, the DSC door switch provides the consent for the air curtain operation (ventilation, valve opening, internal resistance supply) and denies it as soon as the door is closed.

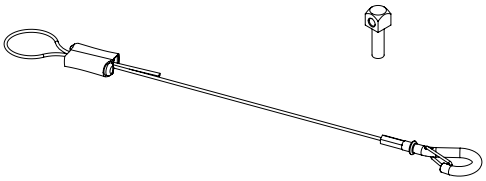
ST **Suspension brackets kit**
(LC, LC-ECM and LI models only, included for LU model)

The Kit consists of brackets and of the fixing elements (except wall fixing plugs).



CAV **Suspension bracket kit with wires**
(LC, LC-ECM and LI models only)

The Kit consists of steel wires with hook and of fixing eye-bolts (except ceiling fixing elements).



PR-LC **Plenum for concealed installation with aesthetic frame** (LC and LC-ECM models only)

The plenum with aesthetic frame allows the concealed installation of the LC Curtain model. Thanks to this option, the Air Curtains do not interfere with the harmony of the ambient where they are installed.

LU and LU-ECM models

LU–A Control system

The units are equipped, as standard, with electronic board to manage:
- High/Low speed ON button.
- ON indication and failure LED.
- Terminals for "Door Contact" external connection.
- Terminals for connecting a remote ON/OFF switch.
- Dip switch to set the post-ventilation delay time of the door closure fan.

LU–W/E and LU-ECM-A/W/E Control systems

The units are equipped, as standard, with electronic board, receiver unit for remote control and **RR03-LU** remote control to manage:
- ON/OFF unit.
- Fan speed selection.
- Water valve ON/OFF actuator ("W" version).
- Activation of the electric resistance 1st and 2nd stage ("E" version).
- Door interlock.
- Remote ON/OFF interlock.

Several units can be controlled in Master/Slave mode.

T-MB2 control (accessory) for LU-W/E and LU-ECM-A/W/E versions

The units can be managed by the **T-MB2** control.

LC, LC-ECM and LI models

LC-A and LI-A Control systems

Wall-mounted remote control (provided as standard):
- High/Low speed-Standby ON button.
- ON indication or Standby LED.
- "Door Contact" external connection terminals.
- Terminals for connecting a remote ON/OFF switch.
- Dip switch to set the post-ventilation delay time of the door closure fan.

LC-W/E and LI-W/E, LC-ECM-A/W/E Control systems

T-MB2 Control with TFT 2,4" coloured graphic display for wall installation, equipped with WiFi module and BLE for the management of the connected unit via Sabiana APP.
The main characteristics are:
- Management by keyboard or via Sabiana APP
- Operation mode setting
- Fan speed switch
- Advanced daily/weekly ON/OFF programming with 3 pre-settable weekly programs
- Viewing and editing of the unit operating parameters, alarm diagnostics and information about the unit
- Activation/deactivation of the room temperature display

Fan coils

Sabiana has been making fan coils since 1980, units that stand out for their **attractive design** and very low noise and power consumption, responding to current demand for **energy saving** and **indoor comfort**.

In 1994 the company acquired the patent to exclusively manufacture one of the most innovative components ever developed for hydronic terminal units, one that is still widely used today and is part of a product designed to air-condition a wide variety of different environments, with the result of **significantly improving indoor air quality** (IAQ) and, by reducing the amount of outside air needed in the system, decreasing air-conditioning costs. The name of this electronic filter - **Crystall** - is quite symbolic, and is used to identify this specific type of solution.

In 2004 a new generation of **cassettes** was introduced, designed for installation in false ceilings, featuring a modern design, different colours and different aesthetic solutions, leading the company to soon become one of the European leaders in the production of fan coils and helping it expand its market to other continents.

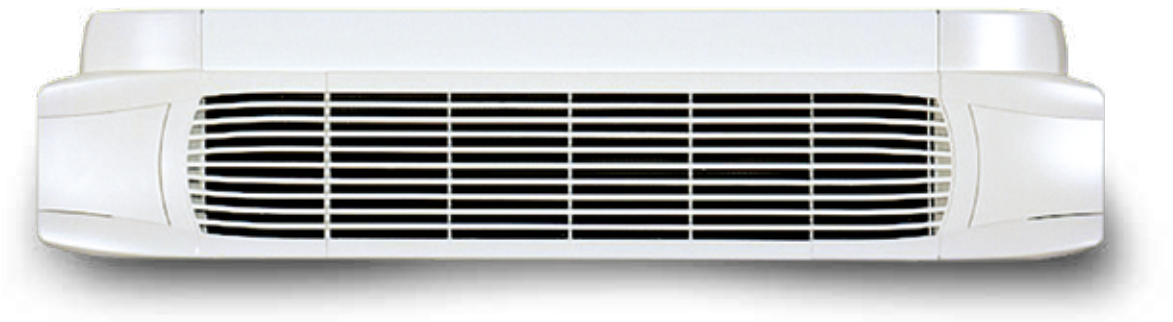
In 2009, Sabiana was the first company in the world to introduce **inverter-driven brushless and sensorless motors** in its cassette units, with power consumption below 10 watts in the most common operating conditions.
Continuous adjustment of air flow-rate also means muchmore precise control over indoor temperature.

The following pages illustrate all the solutionsthat are currently available, both featuring traditional asynchronous motors and electronically controlled motors, with performance certified by the independent institute **EUROVENT**.

Sabiana obtained the Eurovent certification in 1996. Eurovent is an independent body recognized in all Europe that ensures total reliability and transparency of performances.

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

www.eurovent-certification.com



Carisma is the result of a great commitment of energy and resources, with the aim of offering an innovative product in terms of design, performance, low noise, energy saving and functionality.

Upon request, **innovative electronic motors** with extremely low energy consumption, controlled by an inverter board and identified by ECM, are available with centrifugal and tangential fan. The ECM motors allow electrical consumption to be decreased by more than 50% compared to traditional asynchronous motors. They enable continuous air flow control and precise control over the ambient temperature, with further benefits in terms of very low noise levels thanks to the reduced average working speed.

The 5 models (for wall and ceiling installation, with casing and concealed) and the different available coils (with three or four rows for two pipe systems, one or two rows for four pipe systems) offer great installation flexibility and allow the use of low temperature hot water, in line with the development of modern boilers and heat pumps.

The Carisma Fan coil unit can be equipped with **Crystall active electrostatic filtration** (Sabiana patented) that allows obtaining a high filtering level ($ePM_1 \leq 95\%$ - MPPS* $\geq 95\%$) of the recirculation/secondary air (according to the definition provided by standard EN 16798.3). In this way the fan coil becomes an air purifier that allows a remarkable reduction of fine particles present in the ambient and guarantees the healthy of its occupants. The filtration efficiency performance is certified in accordance with the EN ISO 16890 current standard.

A full range of controls is available for rapidly obtaining correct ambient temperature and desired performances and comfort. The Carisma model is complemented with a full range of accessories: various types of adjustment valves, sturdy support feet, rear covering panel for glass installation, additional electric heater, auxiliary condensate pump, fresh air intake louver, air inlet/outlet diffusers for concealed systems.

* Most Penetrating Particle Size or most penetrating particles with aeraulic diameter between 0.2 and 0.4 µm within the absolute filter rating.

Carisma CRC

Fan Coil Unit with Centrifugal Fan with Asynchronous Motor

Range includes **9 air flow rates** (from 105 to 1500 m^3/h) and **5 models** (for wall and ceiling installation, with casing and concealed), each equipped with 3 or 4 row coil and with the possibility to add a 1 or 2 row coil for 4 pipe systems.

It is the most comprehensive range, perfectly suited to meet all of the climate control needs of work environments such as offices, shops, restaurants and hotel rooms featuring ducted installations with available pressure **up to 50 Pa**.

TECHNICAL CHARACTERISTICS

Outer casing: made with strong synthetic lateral corners and from galvanized and prepainted front steel panel. The plastic top grid has fixed louvres and is reversible in order to distribute the air in two different directions.

Standard colours:

- Lateral corners and top grid: **Pantone Cool Grey 1C (light grey)**
- Front panel: **RAL 9003 (white)**
- Other colours on request.

Inner casing: made from 1 mm galvanized steel insulated with 3 mm polyolefin (PO) foam (B-s2-d0 EN 13501-1).

Filter: polypropylene cellular fabric regenerating filter. The filter frame of galvanized steel is inserted into special plastic sliding guides fastened to the internal structure for easy insertion and removal of the filter. Filter presence is highlighted by a plastic front cover featuring the same colour as the top grid.

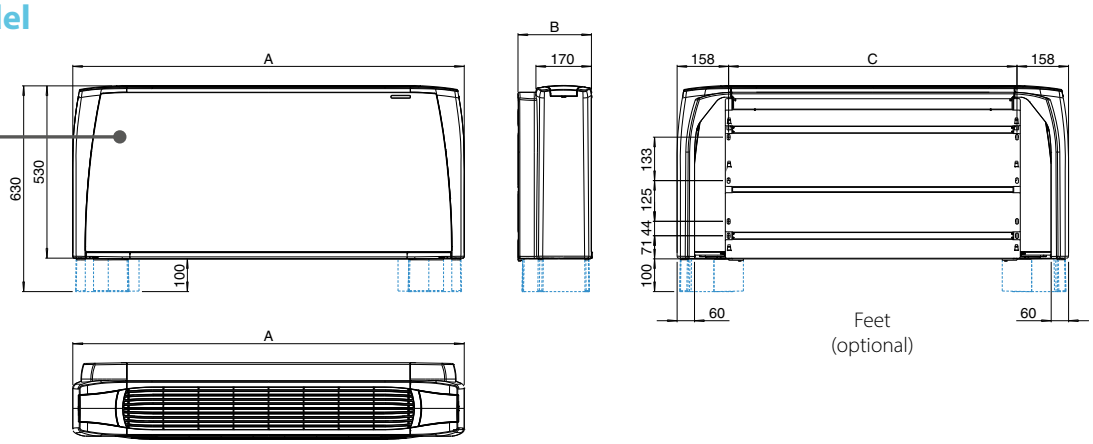
Fan assembly: the fans have aluminium or plastic blades directly keyed on the motor with double aspiration and they are dynamically and statically balanced during manufacture in order to have an extremely quiet operation.

Electric motor: the motor is wired for single phase and has six speeds, three of which are connected, with capacitor. The motor is fitted on sealed for life bearings and is secured on anti-vibration and self-lubricating mountings. Internal thermal protection with automatic reset, protection IP 20, class B.

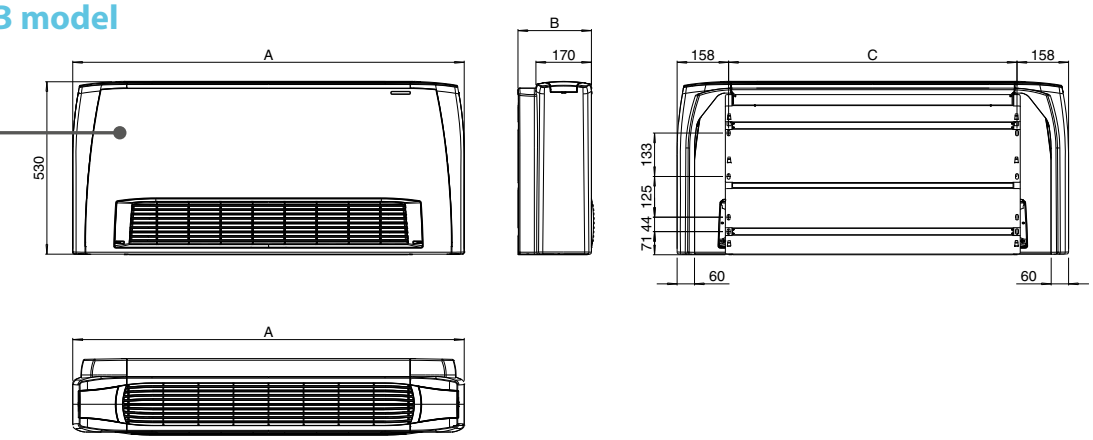
Coil: it is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process. The coil has two 1/2 inch BSP internal connections and 1/8 inch BSP air vent and drain. The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.
Flow and return pipe connections are situated at the same end on the left side looking at the unit. On request we can deliver the unit with the connections on the right end side. This operation can also be easily carried out on site during installation.

Condensate collection tray: made from plastic with an "L"-shaped plastic fitted on the inner casing; in the MO-MVB and IV-IO model the tray is insulated with 3 mm polyolefin (PO) foam (B-s2-d0 EN 13501-1). The outside diameter of the condensate discharge pipe is 15 mm.

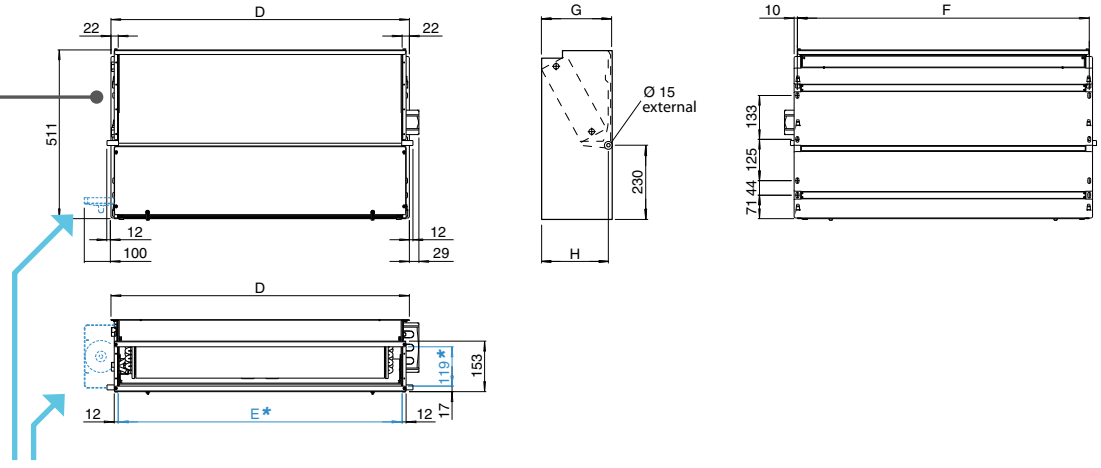
MV model



MO-MVB model



IV-IO model

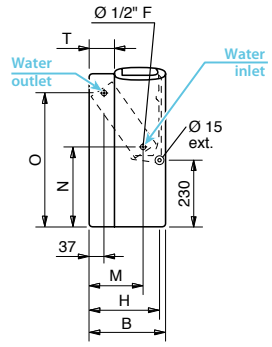
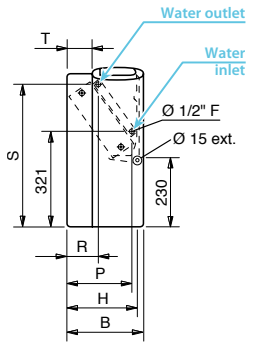
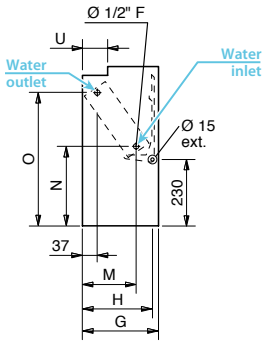
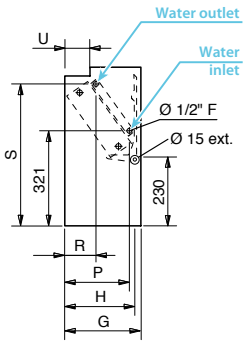


Auxiliary condensate tray (optional)

Coil connections on the left

* Supply frame dimension = E x 119 mm

Coil connections

MV and MO-MVB model		IV-IO model	
3 or 4 row coils	Heating additional coil (1 or 2 rows)	3 or 4 row coils	Heating additional coil (1 or 2 rows)
			

Dimension (mm)

Model	1	2	3	4	5	6	7	8	9
A	670	770	985	985	1200	1200	1415	1415	1415
B	225	225	225	225	225	225	225	255	255
C	354	454	669	669	884	884	1099	1099	1099
D	374	474	689	689	904	904	1119	1119	1119
E	330	430	645	645	860	860	1075	1075	1075
F	354	454	669	669	884	884	1099	1099	1099
G	218	218	218	218	218	218	218	248	248
H	205	205	205	205	205	205	205	235	235
M	145	145	145	145	145	145	145	170	170
N	260	260	260	260	260	260	260	270	270
O	460	460	460	460	460	460	460	450	450
P	185	185	185	185	185	185	185	210	210
R	105	105	105	105	105	105	105	110	110
S	475	475	475	475	475	475	475	465	465
T	55	55	55	55	55	55	55	85	85
U	65	65	65	65	65	65	65	95	95

Weight (kg)

	Model		Weight with packaging									Weight without packaging								
			1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
MV MO-MVB	ROWS	**3**	15,5	17,2	21,4	22,5	26,9	27,7	32,1	35,7	35,9	13,9	15,4	19,1	20,2	24,1	24,9	28,8	32,0	32,2
		3+1	16,2	18,0	22,6	23,7	28,4	29,2	33,9	37,5	37,7	14,6	16,2	20,3	21,4	25,6	26,4	30,6	33,8	34,0
		3+2	16,7	18,6	23,3	24,4	29,3	30,1	35,0	38,6	38,8	15,1	16,8	21,0	22,1	26,5	27,3	31,7	34,9	35,1
		4	16,0	18,0	22,4	23,5	28,1	29,0	33,6	37,2	37,4	14,4	16,2	20,1	21,2	25,3	26,2	30,3	33,5	33,7
		4+1	16,7	18,8	23,6	24,7	29,6	30,5	35,4	39,0	39,2	15,1	17,0	21,3	22,4	26,8	27,7	32,1	35,3	35,5
IV-IO	ROWS	**3**	12,2	13,6	17,1	18,1	21,9	22,8	27,0	30,2	30,4	10,6	11,8	15,3	16,3	19,6	20,5	24,2	27,1	27,3
		3+1	12,9	14,4	18,3	19,3	23,4	24,3	28,8	32,0	32,2	11,3	12,6	16,5	17,5	21,1	22,0	26,0	28,9	29,1
		3+2	13,4	15,0	19,0	20,0	24,3	25,2	29,9	33,1	33,3	11,8	13,2	17,2	18,2	22,0	22,9	27,1	30,0	30,2
		4	12,7	14,4	18,1	19,1	23,1	24,1	28,5	31,7	31,9	11,1	12,6	16,3	17,3	20,8	21,8	25,7	28,6	28,8
		4+1	13,4	15,2	19,3	20,3	24,6	25,6	30,3	33,5	33,7	11,8	13,4	17,5	18,5	22,3	23,3	27,5	30,4	30,6

Water content (litres)

Model		1	2	3	4	5	6	7	8	9
ROWS	**3**	0,5	0,6	0,9	0,9	1,3	1,6	1,7	1,9	1,9
	4	0,7	0,8	1,3	1,3	1,7	2,2	2,4	2,8	2,8
	+1	0,2	0,2	0,3	0,3	0,4	0,5	0,5	0,6	0,6
	+2	0,4	0,4	0,6	0,6	0,8	1,0	1,0	1,2	1,2

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Units with 3 row coil

2 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T +12 °C L.W.T

HEATING (winter mode)
Entering air temperature: +20 °C
Water temperature: +45 °C E.W.T. +40 °C L.W.T.

Model			CRC 13						CRC 23						CRC 33					
Speed			1 **(E)**	2	3	4 **(E)**	5	6 **(E)**	1 **(E)**	2	3 **(E)**	4	5 **(E)**	6	1	2 **(E)**	3 **(E)**	4	5 **(E)**	6
			MIN			**MED**		**MAX**	**MIN**		**MED**		**MAX**			**MIN**	**MED**		**MAX**	
Air flow		m^3/h	**105**	125	150	**175**	195	**220**	**145**	170	**220**	250	**295**	340	185	**235**	**270**	325	**385**	440
Cooling total emission **(E)**		kW	**0,57**	0,66	0,75	**0,84**	0,91	**1,00**	**0,90**	0,99	**1,23**	1,35	**1,53**	1,70	1,27	**1,55**	**1,76**	2,04	**2,35**	2,61
Cooling sensible emission **(E)**		kW	**0,45**	0,53	0,60	**0,69**	0,75	**0,83**	**0,68**	0,76	**0,95**	1,06	**1,21**	1,36	0,92	**1,13**	**1,30**	1,51	**1,76**	1,97
Heating **(E)**		kW	**0,64**	0,76	0,86	**0,98**	1,07	**1,19**	**0,94**	1,06	**1,34**	1,49	**1,70**	1,92	1,26	**1,56**	**1,79**	2,10	**2,44**	2,74
Heating - Water 70-60 °C		kW	**1,31**	1,53	1,75	**1,99**	2,18	**2,42**	**1,90**	2,14	**2,70**	3,00	**3,44**	3,89	2,54	**3,14**	**3,61**	4,24	**4,92**	5,52
Dp Cooling **(E)**		kPa	**2,5**	3,0	3,8	**4,7**	5,4	**6,3**	**2,5**	3,0	**4,4**	5,3	**6,5**	7,9	6,6	**9,4**	**11,8**	15,3	**19,7**	23,8
Dp Heating **(E)**		kPa	**0,9**	1,1	1,4	**1,8**	2,1	**2,5**	**2,2**	2,8	**4,2**	5,0	**6,4**	7,9	5,4	**7,8**	**10,0**	13,2	**17,1**	21,0
Fan **(E)**		W	**16**	19	21	**25**	29	**33**	**14**	16	**22**	26	**32**	40	15	**20**	**25**	32	**41**	49
Sound power **(E)**		dB(A)	**32**	34	36	**39**	42	**45**	**30**	33	**40**	43	**47**	51	31	**36**	**40**	45	**49**	52
Sound pressure **(*)**		dB(A)	**23**	25	27	**30**	33	**36**	**21**	24	**31**	34	**38**	42	22	**27**	**31**	36	**40**	43
1 row heating additional coil (Water 70/60 °C)	Heating **(E)**	kW	**0,63**	0,71	0,79	**0,89**	0,96	**1,04**	**0,94**	1,04	**1,25**	1,36	**1,52**	1,68	1,35	**1,59**	**1,77**	2	**2,26**	2,48
	Dp Heat. **(E)**	kPa	**0,7**	0,9	1,0	**1,3**	1,5	**1,7**	**1,7**	2,0	**2,8**	3,3	**4,0**	4,8	3,9	**5,2**	**6,3**	7,8	**9,7**	11,4

Model			CRC 43						CRC 53						CRC63					
Speed			1	2 **(E)**	3 **(E)**	4	5 **(E)**	6	1	2 **(E)**	3	4 **(E)**	5 **(E)**	6	1 **(E)**	2	3 **(E)**	4	5 **(E)**	6
				MIN	**MED**		**MAX**			**MIN**		**MED**		**MAX**	**MIN**		**MED**		**MAX**	
Air flow		m^3/h	185	**265**	**335**	400	**485**	570	250	**315**	420	**495**	545	**650**	**415**	505	**590**	680	**760**	830
Cooling total emission **(E)**		kW	1,25	**1,71**	**2,11**	2,43	**2,83**	3,19	1,66	**2,01**	2,55	**2,90**	3,13	**3,58**	**2,50**	2,94	**3,32**	3,70	**4,01**	4,26
Cooling sensible emission **(E)**		kW	0,91	**1,26**	**1,57**	1,82	**2,15**	2,45	1,22	**1,49**	1,91	**2,19**	2,38	**2,76**	**1,87**	2,23	**2,54**	2,86	**3,12**	3,35
Heating **(E)**		kW	1,25	**1,74**	**2,18**	2,52	**2,97**	3,41	1,65	**2,02**	2,61	**3,00**	3,24	**3,75**	**2,56**	3,05	**3,45**	3,90	**4,26**	4,56
Heating - Water 70-60 °C		kW	2,51	**3,51**	**4,36**	5,08	**6,00**	6,87	3,32	**4,07**	5,26	**6,04**	6,54	**7,57**	**5,17**	6,15	**6,96**	7,87	**8,61**	9,22
Dp Cooling **(E)**		kPa	6,5	**11,2**	**16,2**	20,8	**27,2**	33,8	4,1	**5,8**	8,8	**11,1**	12,7	**16,2**	**8,6**	11,4	**14,1**	17,2	**19,8**	22,1
Dp Heating **(E)**		kPa	5,3	**9,5**	**14,0**	18,2	**24,3**	30,8	3,4	**4,8**	7,5	**9,6**	11,0	**14,2**	**7,3**	9,9	**12,3**	15,2	**17,8**	20,1
Fan **(E)**		W	14	**21**	**28**	34	**44**	57	18	**22**	32	**39**	46	**61**	**37**	46	**55**	67	**78**	88
Sound power **(E)**		dB(A)	27	**33**	**39**	43	**47**	52	26	**31**	37	**41**	43	**48**	**37**	42	**46**	49	**52**	54
Sound pressure **(*)**		dB(A)	18	**24**	**30**	34	**38**	43	17	**22**	28	**32**	34	**39**	**28**	33	**37**	40	**43**	45
1 row heating additional coil (Water 70/60 °C)	Heating **(E)**	kW	1,34	**1,73**	**2,06**	2,32	**2,65**	2,88	1,77	**2,07**	2,53	**2,83**	3,03	**3,42**	**2,50**	2,87	**3,19**	3,54	**3,81**	4,04
	Dp Heat. **(E)**	kPa	3,9	**6,0**	**8,2**	10,1	**12,8**	14,8	1,2	**1,6**	2,3	**2,8**	3,2	**3,9**	**3,2**	4,1	**4,9**	5,8	**6,7**	7,4

Model			CRC 73						CRC 83						CRC 93					
Speed			1	2 **(E)**	3	4 **(E)**	5	6 **(E)**	1	2 **(E)**	3	4 **(E)**	5	6 **(E)**	1	2 **(E)**	3	4 **(E)**	5	6 **(E)**
				MIN		**MED**		**MAX**		**MIN**		**MED**		**MAX**		**MIN**		**MED**		**MAX**
Air flow		m^3/h	445	**535**	630	**735**	840	**925**	510	**655**	815	**1020**	1100	**1200**	735	**830**	980	**1210**	1365	**1500**
Cooling total emission **(E)**		kW	2,82	**3,29**	3,74	**4,21**	4,66	**5,01**	3,01	**3,68**	4,32	**5,09**	5,36	**5,69**	4,00	**4,38**	4,95	**5,74**	6,21	**6,56**
Cooling sensible emission **(E)**		kW	2,08	**2,45**	2,80	**3,19**	3,56	**3,85**	2,27	**2,82**	3,35	**4,02**	4,26	**4,55**	3,08	**3,40**	3,89	**4,60**	5,03	**5,37**
Heating **(E)**		kW	2,83	**3,34**	3,83	**4,33**	4,83	**5,23**	3,22	**4,02**	4,78	**5,75**	6,11	**6,55**	4,42	**4,86**	5,58	**6,62**	7,26	**7,78**
Heating - Water 70-60 °C		kW	5,71	**6,72**	7,67	**8,73**	9,76	**10,55**	6,49	**8,11**	9,67	**11,63**	12,36	**13,25**	8,87	**9,82**	11,29	**13,39**	14,70	**15,74**
Dp Cooling **(E)**		kPa	12,3	**16,2**	20,3	**25,1**	30,1	**34,2**	7,2	**10,3**	13,8	**18,4**	20,2	**22,5**	11,8	**13,8**	17,3	**22,4**	25,9	**28,6**
Dp Heating **(E)**		kPa	10,1	**13,5**	17,2	**21,3**	25,9	**29,7**	5,6	**8,3**	11,3	**15,6**	17,3	**19,6**	12,9	**16,2**	21,1	**27,8**	33,0	**37,0**
Fan **(E)**		W	44	**54**	66	**79**	92	**103**	47	**62**	81	**105**	116	**130**	78	**92**	108	**134**	152	**176**
Sound power **(E)**		dB(A)	38	**42**	47	**51**	54	**56**	39	**45**	50	**56**	58	**60**	47	**50**	54	**58**	62	**64**
Sound pressure **(*)**		dB(A)	29	**33**	38	**42**	45	**47**	30	**36**	41	**47**	49	**51**	38	**41**	45	**49**	53	**55**
1 row heating additional coil (Water 70/60 °C)	Heating **(E)**	kW	2,89	**3,29**	3,68	**4,09**	4,49	**4,79**	3,03	**3,60**	4,17	**4,86**	5,11	**5,41**	3,89	**4,22**	4,74	**5,46**	5,90	**6,23**
	Dp Heat. **(E)**	kPa	3,4	**4,3**	5,2	**6,3**	7,4	**8,3**	3,7	**5,0**	6,5	**8,5**	9,3	**10,3**	5,8	**6,7**	8,2	**10,5**	12,0	**13,2**

(E) = EUROVENT certified performance. **MIN-MED-MAX** = Standard connected speeds.
(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

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Units with 4 row coil

2 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T +12 °C L.W.T

HEATING (winter mode)
Entering air temperature: +20 °C
Water temperature: +45 °C E.W.T. +40 °C L.W.T.

Model			CRC 14						CRC 24						CRC 34					
Speed			1 **(E)**	2	3	4 **(E)**	5	6 **(E)**	1 **(E)**	2	3 **(E)**	4	5 **(E)**	6	1	2 **(E)**	3 **(E)**	4	5 **(E)**	6
			MIN			**MED**		**MAX**	**MIN**		**MED**		**MAX**			**MIN**	**MED**		**MAX**	
Air flow		m^3/h	**105**	125	150	**175**	195	**220**	**145**	170	**220**	250	**295**	340	185	**235**	**270**	325	**385**	440
Cooling total emission **(E)**		kW	**0,65**	0,77	0,87	**1,00**	1,08	**1,20**	**1,00**	1,11	**1,41**	1,56	**1,78**	2,00	1,32	**1,63**	**1,87**	2,17	**2,53**	2,83
Cooling sensible emission **(E)**		kW	**0,49**	0,58	0,66	**0,77**	0,84	**0,94**	**0,73**	0,82	**1,05**	1,17	**1,35**	1,53	0,95	**1,18**	**1,36**	1,59	**1,86**	2,09
Heating **(E)**		kW	**0,69**	0,80	0,92	**1,07**	1,17	**1,31**	**0,99**	1,11	**1,43**	1,60	**1,83**	2,08	1,30	**1,62**	**1,87**	2,19	**2,59**	2,88
Heating - Water 70-60 °C		kW	**1,38**	1,62	1,86	**2,15**	2,36	**2,63**	**1,98**	2,24	**2,88**	3,22	**3,69**	4,19	2,60	**3,23**	**3,73**	4,40	**5,14**	5,80
Dp Cooling **(E)**		kPa	**1,9**	2,5	3,2	**4,0**	4,7	**5,6**	**4,9**	6,1	**9,1**	11,0	**13,9**	17,2	3,7	**5,3**	**6,7**	8,8	**11,5**	14,1
Dp Heating **(E)**		kPa	**1,7**	2,2	2,8	**3,7**	4,3	**5,3**	**4,0**	4,9	**7,6**	9,3	**11,8**	14,8	2,8	**4,2**	**5,4**	7,1	**9,8**	11,5
Fan **(E)**		W	**16**	19	21	**25**	29	**33**	**14**	16	**22**	26	**32**	40	15	**20**	**25**	32	**41**	49
Sound power **(E)**		dB(A)	**32**	34	36	**39**	42	**45**	**30**	33	**40**	43	**47**	51	31	**36**	**40**	45	**49**	52
Sound pressure **(*)**		dB(A)	**23**	25	27	**30**	33	**36**	**21**	24	**31**	34	**38**	42	22	**27**	**31**	36	**40**	43
1 row heating additional coil (Water 70/60 °C)	Heating **(E)**	kW	**0,63**	0,71	0,79	**0,89**	0,96	**1,04**	**0,94**	1,04	**1,25**	1,36	**1,52**	1,68	1,35	**1,59**	**1,77**	2,00	**2,26**	2,48
	Dp Heat. **(E)**	kPa	**0,7**	0,9	1,0	**1,3**	1,5	**1,7**	**1,7**	2,0	**2,8**	3,3	**4,0**	4,8	3,9	**5,2**	**6,3**	7,8	**9,7**	11,4

Model			CRC 44						CRC 54						CRC 64					
Speed			1	2 **(E)**	3 **(E)**	4	5 **(E)**	6	1	2 **(E)**	3	4 **(E)**	5 **(E)**	6	1 **(E)**	2	3 **(E)**	4	5 **(E)**	6
				MIN	**MED**		**MAX**			**MIN**		**MED**		**MAX**	**MIN**		**MED**		**MAX**	
Air flow		m^3/h	185	**265**	**335**	400	**485**	570	250	**315**	420	**495**	**545**	650	**415**	505	**590**	680	**760**	830
Cooling total emission **(E)**		kW	1,31	**1,81**	**2,25**	2,62	**3,08**	3,50	1,77	**2,17**	2,79	**3,21**	**3,49**	4,03	**2,79**	3,34	**3,81**	4,31	**4,71**	5,04
Cooling sensible emission **(E)**		kW	0,86	**1,21**	**1,51**	1,78	**2,10**	2,39	1,28	**1,58**	2,04	**2,36**	**2,58**	3,01	**2,03**	2,45	**2,81**	3,20	**3,52**	3,79
Heating **(E)**		kW	1,28	**1,80**	**2,27**	2,64	**3,14**	3,62	1,71	**2,10**	2,74	**3,16**	**3,46**	4,01	**2,82**	3,39	**3,90**	4,46	**4,92**	5,31
Heating - Water 70-60 °C		kW	2,57	**3,62**	**4,56**	5,32	**6,33**	7,30	3,44	**4,23**	5,51	**6,37**	**6,97**	8,07	**5,66**	6,81	**7,85**	8,98	**9,90**	10,68
Dp Cooling **(E)**		kPa	3,4	**6,1**	**9,0**	11,7	**15,5**	19,6	7,3	**10,4**	16,3	**20,8**	**24,2**	31,3	**14,4**	19,7	**24,8**	30,9	**36,2**	40,9
Dp Heating **(E)**		kPa	2,6	**5,0**	**7,2**	9,4	**12,8**	16,4	5,6	**8,1**	12,9	**16,6**	**19,5**	25,2	**11,9**	16,5	**21,1**	26,8	**31,8**	36,3
Fan **(E)**		W	14	**21**	**28**	34	**44**	57	18	**22**	32	**39**	**46**	61	**37**	46	**55**	67	**78**	88
Sound power **(E)**		dB(A)	27	**33**	**39**	43	**47**	52	26	**31**	37	**41**	**43**	48	**37**	42	**46**	49	**52**	54
Sound pressure **(*)**		dB(A)	18	**24**	**30**	34	**38**	43	17	**22**	28	**32**	**34**	39	**28**	33	**37**	40	**43**	45
1 row heating additional coil (Water 70/60 °C)	Heating **(E)**	kW	1,34	**1,73**	**2,06**	2,32	**2,65**	2,88	1,77	**2,07**	2,53	**2,83**	**3,03**	3,42	**2,50**	2,87	**3,19**	3,54	**3,81**	4,04
	Dp Heat. **(E)**	kPa	3,9	**6,0**	**8,2**	10,1	**12,8**	14,8	1,2	**1,6**	2,3	**2,8**	**3,2**	3,9	**3,2**	4,1	**4,9**	5,8	**6,7**	7,4

Model			CRC 74						CRC 84						CRC 94					
Speed			1	2 **(E)**	3	4 **(E)**	5	6 **(E)**	1	2 **(E)**	3	4 **(E)**	5	6 **(E)**	1	2 **(E)**	3	4 **(E)**	5	6 **(E)**
				MIN		**MED**		**MAX**		**MIN**		**MED**		**MAX**		**MIN**		**MED**		**MAX**
Air flow		m^3/h	445	**535**	630	**735**	840	**925**	510	**655**	815	**1020**	1100	**1200**	735	**830**	980	**1210**	1365	**1500**
Cooling total emission **(E)**		kW	2,99	**3,51**	4,01	**4,56**	5,08	**5,48**	3,22	**3,97**	4,72	**5,63**	5,94	**6,34**	4,34	**4,79**	5,45	**6,41**	6,98	**7,42**
Cooling sensible emission **(E)**		kW	2,18	**2,57**	2,96	**3,39**	3,80	**4,13**	2,38	**2,98**	3,58	**4,33**	4,59	**4,93**	3,28	**3,63**	4,18	**4,98**	5,48	**5,87**
Heating **(E)**		kW	2,95	**3,49**	4,03	**4,62**	5,15	**5,59**	3,37	**4,26**	5,14	**6,27**	6,60	**7,20**	4,70	**5,23**	6,01	**7,18**	7,93	**8,52**
Heating - Water 70-60 °C		kW	5,93	**7,02**	8,12	**9,30**	10,38	**11,26**	6,78	**8,55**	10,37	**12,52**	13,34	**14,36**	9,47	**10,55**	12,13	**14,52**	16,02	**17,23**
Dp Cooling **(E)**		kPa	9,5	**12,5**	15,9	**20,0**	24,2	**27,7**	9,6	**14,0**	19,0	**26,0**	28,6	**32,2**	8,9	**10,6**	13,4	**17,8**	20,7	**23,2**
Dp Heating **(E)**		kPa	7,5	**10,1**	13,1	**16,6**	20,1	**23,2**	8,5	**12,8**	17,9	**24,9**	27,8	**31,7**	8,3	**10,0**	12,8	**17,6**	20,9	**23,7**
Fan **(E)**		W	44	**54**	66	**79**	92	**103**	47	**62**	81	**105**	116	**130**	78	**92**	108	**134**	152	**176**
Sound power **(E)**		dB(A)	38	**42**	47	**51**	54	**56**	39	**45**	50	**56**	58	**60**	47	**50**	54	**58**	62	**64**
Sound pressure **(*)**		dB(A)	29	**33**	38	**42**	45	**47**	30	**36**	41	**47**	49	**51**	38	**41**	45	**49**	53	**55**
1 row heating additional coil (Water 70/60 °C)	Heating **(E)**	kW	2,89	**3,29**	3,68	**4,09**	4,49	**4,79**	3,03	**3,60**	4,17	**4,86**	5,11	**5,41**	3,89	**4,22**	4,74	**5,46**	5,90	**6,23**
	Dp Heat. **(E)**	kPa	3,4	**4,3**	5,2	**6,3**	7,4	**8,3**	3,7	**5,0**	6,5	**8,5**	9,3	**10,3**	5,8	**6,7**	8,2	**10,5**	12,0	**13,2**

(E) = EUROVENT certified performance. **MIN-MED-MAX** = Standard connected speeds.
(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

Breeze Frame Kit | FOR CARISMA CRC WALL CONCEALED INSTALLATION

The Carisma Breeze frame kit is available in **3 sizes** and allows the installation of **recessed** Carisma fan coils.

The kit includes a top closing panel that prevents the access to technical spaces and coil ensuring **the safety of the end user**.

The aesthetic frame includes:

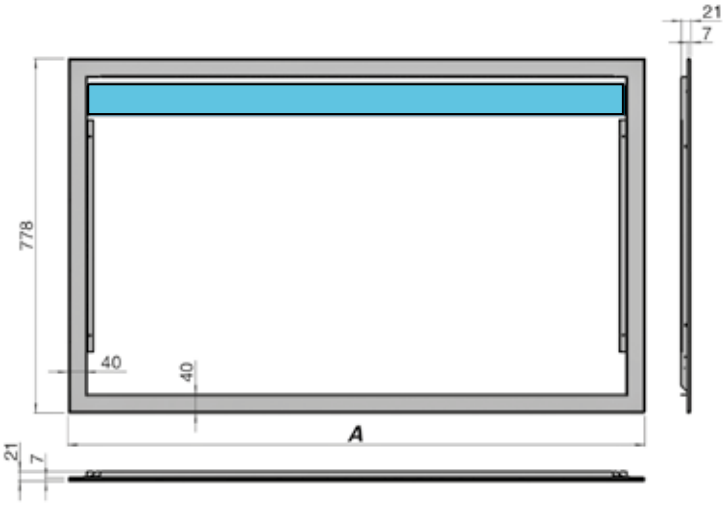
- the closing frame;
- air supply louvre;
- front panel;
- air intake grid.

The air supply louvre is made of extruded aluminum with satin finish.

Perimeter frame, front panel and **intake grid** are made of steel painted with epoxy polyester coat, dried in a furnace at 180 °C, colour RAL 9003. It is possible to repaint the entire frame of the same color as the wall.

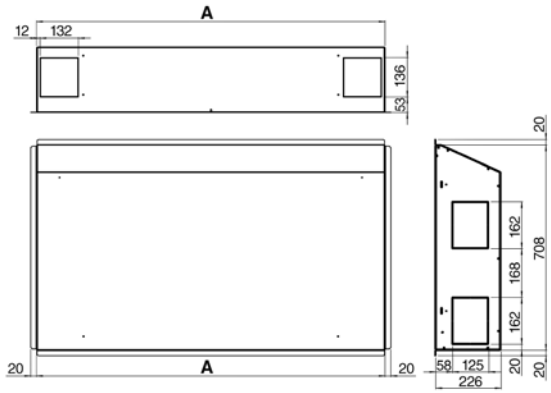
The recessed box is made of galvanized steel with opening for the electrical and hydraulic connections.

Aesthetic frame dimensions



Size	Measurement A
2	837
3/4	1052
5/6	1267

Recessed box dimensions



Size	Measurement A
2	771
3/4	986
5/6	1201

Indoor Air Quality

The **CRC and CRC-ECM Crystall Sabiana** electrostatic filter matches the need for better air conditioning with the concepts of space and design.
With this filter the various stages of air treatment are combined in one appliance.

Thanks to this new patented filter (efficiency compliant with EN 16890), air pollutants such as cigarette smoke, dust (PM_{10}, $PM_{2.5}$), pollen and most biological organisms **are eliminated**.

In addition, as fresh air is not being introduced to obtain the best climatic conditions, there are consequential energy savings.

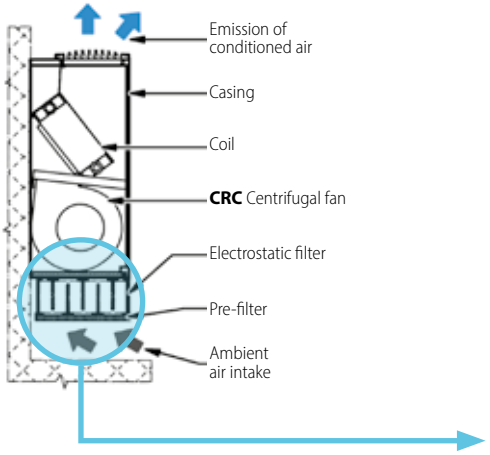
Operating principle of the Crystall electrostatic filter

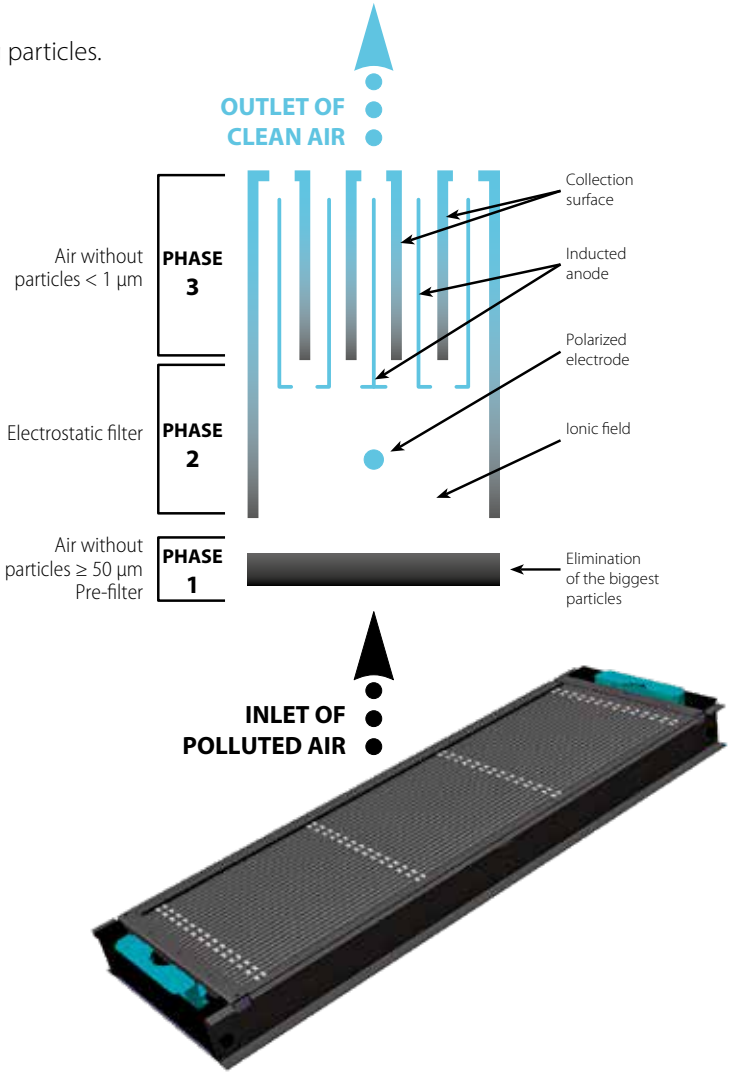
The air is sucked in and first passes a mechanical prefilter, which stops away particles of more than 50 µm (dust, insects, etc.). Then the smallest particles (50÷0.01 µm) are exposed to an intensive ionic field and are polarized (**PHASE 1**).

The charged particles passing through the second filter section, are pushed back by the anode and attracted by the collection surfaces by a strong, inducted magnetic field (**PHASE 2**).

The charged particles passing through the second filter section, are pushed back by the anode and attracted by the collection surfaces by a strong, inducted magnetic field **(PHASE 3)**.

The air which leaves the unit is free from polluting particles.





Electronic controls included

MV-MVB models	
CB	3 speed control
CB-T	3 speed control with electronic thermostat and manual summer/winter switch
CB-C	3 speed control with electronic thermostat and centralized summer/winter switch
CB-AUT	Automatic 3 speed control with electronic thermostat and centralized/manual summer/winter switch

N.B.: if the electrostatic filter or the electric heater is mounted, use the "**IAQ**" controls.

Electronic wall controls

MV, MO-MVB and IV-IO models	
WM-3V	3 speed control
WM-T	3 speed control with electronic thermostat and manual summer/winter switch
WM-TQR	3 speed control with electronic thermostat and centralized/manual summer/winter switch
WM-AU	Automatic speed control with electronic thermostat and summer/winter switch (to be used with UPM-AU or UP-AU only)
T-MB2	Wall control with LCD color display and WiFi (to be used with UPM-AU or UP-AU only)
WM-503-AC-EC	Automatic speed control with electronic thermostat to be mounted in the 503 box (to be used with UP-503-AC-EC only)
T2T	Electromechanical thermostat with summer/winter switch (only for 2 pipe units)
UPM-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, fitted on the unit
UP-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, not fitted on the unit
UP-503-AC-EC	UP-503-AC-EC power unit for WM-503-AC-EC remote control, not fitted on the unit

NOTE: for more information about Controls and for full list of main Accessories, please see the dedicated pages.

Electronic controls for MB boards

MB-M	MB electronic board fitted on the unit
MB-S	MB electronic board supplied with separate packaging
T-MB2	Wall control with LCD color display and WiFi (to be used with MB board only)
T-MB2-M	T-MB2 control fitted on the unit, for MV/MVB models (to be used with MB board only)
T-MB2-S	T-MB2 control supplied with separate packaging, for MV/MVB models (to be used with MB board only)
RS-RT03	Infra-red remote control with receiver supplied with separate packaging (to be used with MB board only)
RT03 / RR03	Infra-red remote control supplied with separate packaging (to be used with MB board only)
RT04	Infra-red remote control supplied with separate packaging (to be used with MB board only) - **Available from April 2025**
RS	Receiver for infra-red remote control supplied with separate packaging (to be used with MB board only)
PSM-DI	PSM-DI multifunction control panel (to be used with MB board only)
T-DI	T-DI touch screen multifunction control panel (to be used with MB board only)
SabWeb	Web gateway for Sabiana Cloud (to be used with MB board only)

Sabianet management system for a network of fan coils	
Sabianet	Hardware/software supervisory system (to be used with MB board only)
Router-S	Router for Sabianet (default) or for BMS systems not provided by Sabiana
SIOS	Relay output board for Sabianet

Controls for KNX systems

KNX systems	
WM-KNX	Wall control with electronic thermostat and summer/winter switch (to be used with UP-KNX and PL mounting plate only)
UP-KNX	UP-KNX power unit supplied with separate packaging
PL-503-B	Mounting plate for rectangular box
PL-QUA-B	Mounting plate for rectangular box

NOTE: for more information about Controls and for full list of main Accessories, please see the dedicated pages.

Built-in electronic control

T-MB2
Wall control with LCD color display and WiFi

WM-TQR
Wall electronic control

Carisma CRC-ECM

(*)

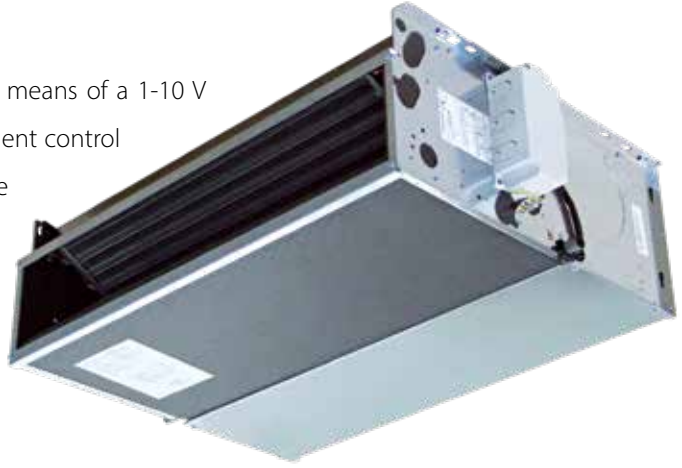
Fan Coil Unit with Centrifugal Fan with EC Brushless Electronic Motor and Inverter Board

Range includes **5 air flow rates** (from 115 to 1395 m^3/h) and **5 models** (for wall and ceiling installation, with casing and concealed), each equipped with 3 or 4 row coil and with the possibility to add a 1 or 2 row coil for 4 pipe systems. This is the series with the **lowest electrical consumption** in relation to both heat performance as well as working static performance and is particularly suited to satisfying the strictest energy consumption needs **of class A** buildings, and to ensuring excellent acoustic comfort.

The ECM range makes use of the excellent experience gained with the SkyStar Cassette fan coils with inverter board, first in the world in production since 2009, and which have had great success on all markets.

The innovative **brushless** and **sensorless** type synchronous electronic motor with permanent magnets, is controlled by an inverter board designed and developed in Italy. The board is mounted on the unit, closed to the motor, without the need to be cooled down by the air flow.

The air flow rate can be varied **in continuously** by means of a 1-10 V signal generated by Sabiana controls or by independent control systems. The continuous air flow control improves the acoustic comfort and allows a more punctual reply to the variation of the thermal loads and a greater stability of the requested ambient temperature.



(*) See availabilty function on controls.

The extreme efficiency, also at low speed, makes possible a great reduction in electric consumption (50% less in comparison to CRC AC motor) with absorption values under normal operating conditions that **do not exceed 16 Watt**.

The excellent values of the CRC range in terms of sound levels have been maintained **in all working conditions**, without any resonance phenomenon at any frequency.

The full compliance with the Electromagnetic Compatibility Directive and with the other severe Standards in force is certified by an independent institute.

For the technical characteristics of the various components refer to Carisma CRC Fan Coil Unit, except for Electronic motor:

Three phase permanent magnet brushless electronic motor that is controlled with current reconstructed according to a **BLAC** sinusoidal wave.

The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a **switching system**, it generates a three-phase frequency modulated, wave form power supply.

The electric power supply required for the machine is therefore single-phase with voltage of **230 V** and frequency of **50 - 60 Hz**.

(*)

Sabiana WiFi

Sabiana WiFi is the App for the control at a distance of your Sabiana system of climatisation. Free and easy to use, it needs only a wireless network and a smartphone with internet connection.
Using the "Cloud" it allows to manage, program and supervise the status of Your air conditioners wherever You are.

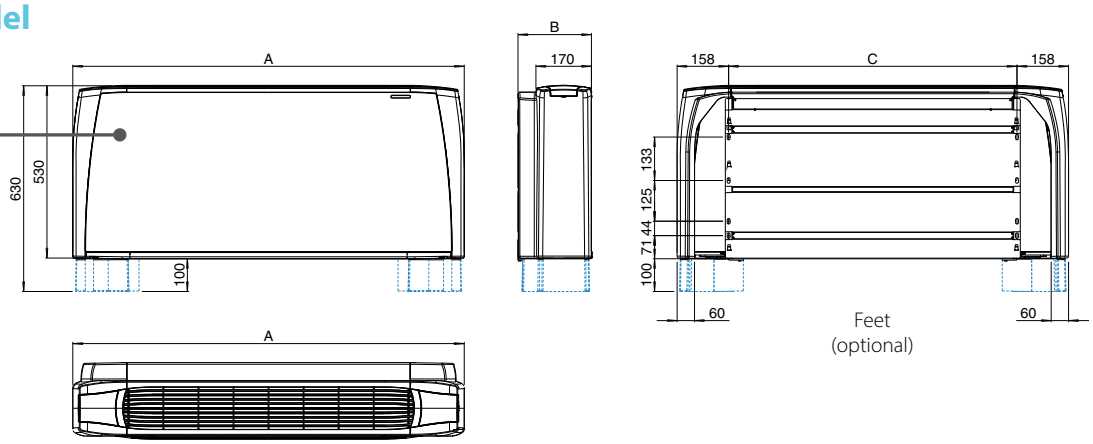
(*)

Sabiana BLE

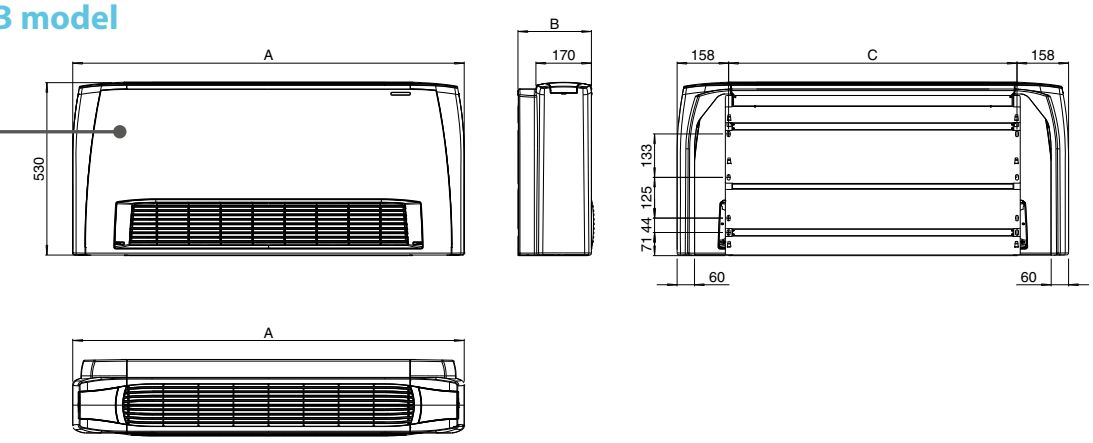
Sabiana BLE is the new App for Android™ and iOS systems to set, manage and control Your climatisation system via Bluetooth Low Energy (BLE) transmission.
Free and easy to configure and use, it needs only a smartphone with a Bluetooth connection (version 4.0 or later versions).

(*) See availabilty function on controls.

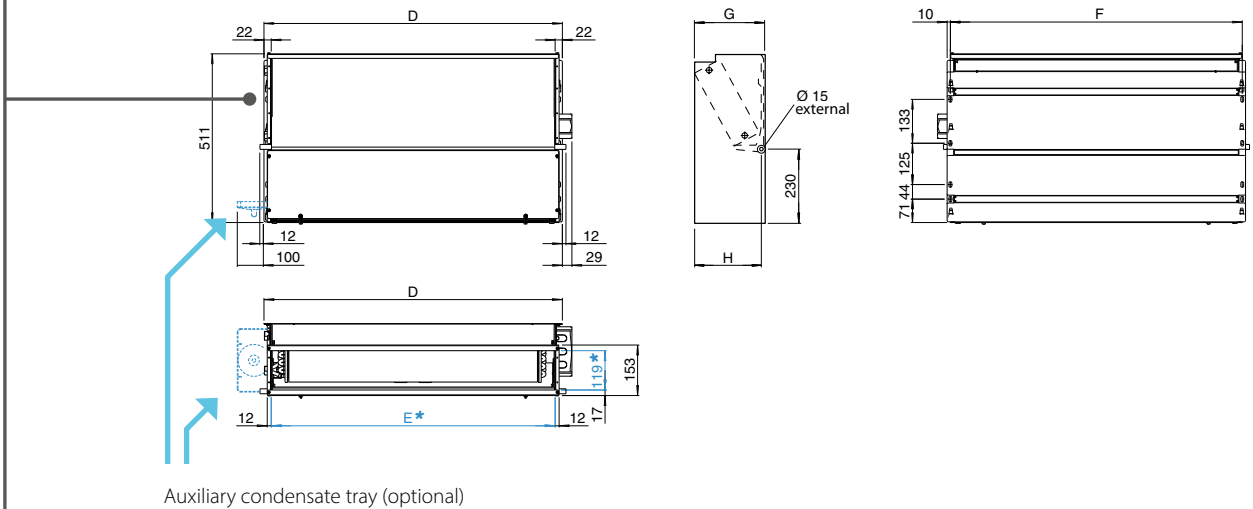
MV model



MO-MVB model



IV-IO model



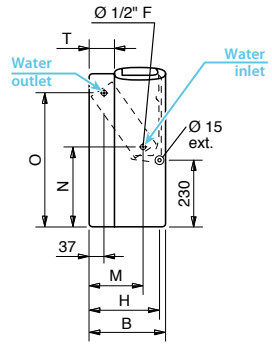
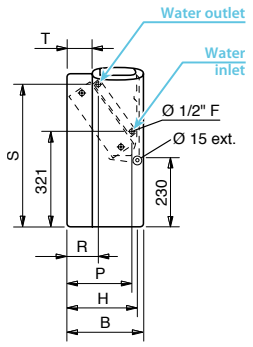
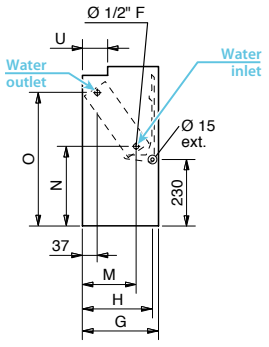
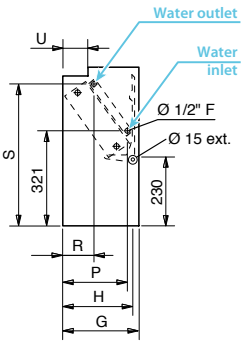
Auxiliary condensate tray (optional)

Coil connections on the left

* Supply frame dimension = E x 119 mm

DIMENSIONS, WEIGHT, WATER CONTENT

Coil connections

MV and MO-MVB model		IV-IO model	
3 or 4 row coils	Heating additional coil (1 or 2 rows)	3 or 4 row coils	Heating additional coil (1 or 2 rows)
			

Dimension (mm)

Model	2	4	6	7	9
A	770	985	1200	1415	1415
B	225	225	225	225	255
C	454	669	884	1099	1099
D	474	689	904	1119	1119
E	430	645	860	1075	1075
F	454	669	884	1099	1099
G	218	218	218	218	248
H	205	205	205	205	235
M	145	145	145	145	170
N	260	260	260	260	270
O	460	460	460	460	450
P	185	185	185	185	210
R	105	105	105	105	110
S	475	475	475	475	465
T	55	55	55	55	85
U	65	65	65	65	95

Weight (kg)

	Model		Weight with packaging					Weight without packaging				
			2	4	6	7	9	2	4	6	7	9
MV MO-MVB	ROWS	**3**	17,2	22,5	27,7	32,1	35,9	15,4	20,2	24,9	28,8	32,2
		3+1	18,0	23,7	29,2	33,9	37,7	16,2	21,4	26,4	30,6	34,0
		3+2	18,6	24,4	30,1	35,0	38,8	16,8	22,1	27,3	31,7	35,1
		4	18,0	23,5	29,0	33,6	37,4	16,2	21,2	26,2	30,3	33,7
		4+1	18,8	24,7	30,5	35,4	39,2	17,0	22,4	27,7	32,1	35,5
IV-IO	ROWS	**3**	13,6	18,1	22,8	27,0	30,4	11,8	16,3	20,5	24,2	27,3
		3+1	14,4	19,3	24,3	28,8	32,2	12,6	17,5	22,0	26,0	29,1
		3+2	15,0	20,0	25,2	29,9	33,3	13,2	18,2	22,9	27,1	30,2
		4	14,4	19,1	24,1	28,5	31,9	12,6	17,3	21,8	25,7	28,8
		4+1	15,2	20,3	25,6	30,3	33,7	13,4	18,5	23,3	27,5	30,6

Water content (litres)

Model		2	4	6	7	9
ROWS	**3**	0,6	0,9	1,6	1,7	1,9
	4	0,8	1,3	2,2	2,4	2,8
	+1	0,2	0,3	0,5	0,5	0,6
	+2	0,4	0,6	1,0	1,0	1,2

www.eurovent-certification.com

Units with 3 row coil

2 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

HEATING (winter mode)
Entering air temperature: +20 °C
Water temperature: +45 °C E.W.T. +40 °C L.W.T.

Model			CRC-ECM 23					CRC-ECM 43					CRC-ECM 63				
Inverter Power **(V)**			1 **(E)**	3	5 **(E)**	7,5	10 **(E)**	1 **(E)**	3	5 **(E)**	7,5	10 **(E)**	1 **(E)**	3	5 **(E)**	7,5	10 **(E)**
Speed			**MIN**		**MED**		**MAX**	**MIN**		**MED**		**MAX**	**MIN**		**MED**		**MAX**
Air flow		m^3/h	**120**	170	**220**	270	**330**	**210**	280	**350**	430	**515**	**305**	395	**495**	610	**735**
Cooling total emission **(E)**		kW	**0,73**	0,97	**1,18**	1,37	**1,59**	**1,41**	1,80	**2,18**	2,57	**2,95**	**1,96**	2,44	**2,93**	3,44	**3,96**
Cooling sensible emission **(E)**		kW	**0,55**	0,74	**0,92**	1,09	**1,28**	**1,03**	1,33	**1,64**	1,95	**2,26**	**1,46**	1,83	**2,22**	2,64	**3,08**
Heating **(E)**		kW	**0,77**	1,04	**1,29**	1,52	**1,80**	**1,42**	1,84	**2,26**	2,69	**3,14**	**1,96**	2,46	**3,00**	3,55	**4,14**
Heating - Water 70-60 °C		kW	**1,55**	2,10	**2,61**	3,09	**3,64**	**2,85**	3,70	**4,55**	5,43	**6,33**	**3,95**	4,97	**6,04**	7,17	**8,37**
Dp Cooling **(E)**		kPa	**2,2**	3,6	**5,1**	6,7	**8,6**	**7,9**	12,0	**17,0**	22,6	**28,9**	**5,5**	8,0	**11,1**	14,8	**19,0**
Dp Heating **(E)**		kPa	**1,6**	2,7	**3,9**	5,2	**7,0**	**6,6**	10,4	**14,9**	20,4	**26,7**	**4,5**	6,8	**9,6**	12,9	**17,0**
Fan **(E)**		W	**7**	9	**11**	15	**21**	**6**	9	**12**	17	**25**	**7**	10	**15**	22	**32**
Sound power **(E)**		dB(A)	**30**	36	**41**	47	**51**	**30**	36	**42**	47	**51**	**33**	38	**44**	49	**54**
Sound pressure **(*)**		dB(A)	**21**	27	**32**	38	**42**	**21**	27	**33**	38	**42**	**24**	29	**35**	40	**45**
1 row heating additional coil (Water 70/60 °C)	Heating **(E)**	kW	**0,81**	1,04	**1,23**	1,42	**1,63**	**1,47**	1,79	**2,11**	2,42	**2,74**	**2,00**	2,40	**2,80**	3,24	**3,68**
	Dp Heat. **(E)**	kPa	**1,3**	1,9	**2,6**	3,4	**4,3**	**4,5**	6,4	**8,5**	10,9	**13,6**	**1,5**	2,1	**2,8**	3,6	**4,5**

Model			CRC-ECM 73					CRC-ECM 93				
Inverter Power **(V)**			1 **(E)**	3	5 **(E)**	7,5	10 **(E)**	1 **(E)**	3	5 **(E)**	7,5	10 **(E)**
Speed			**MIN**		**MED**		**MAX**	**MIN**		**MED**		**MAX**
Air flow		m^3/h	**400**	500	**610**	755	**890**	**605**	785	**945**	1175	**1395**
Cooling total emission **(E)**		kW	**2,60**	3,13	**3,68**	4,36	**4,94**	**3,45**	4,22	**4,82**	5,60	**6,26**
Cooling sensible emission **(E)**		kW	**1,92**	2,33	**2,77**	3,32	**3,80**	**2,63**	3,28	**3,79**	4,49	**5,10**
Heating **(E)**		kW	**2,56**	3,13	**3,72**	4,43	**5,08**	**3,74**	4,65	**5,41**	6,46	**7,38**
Heating - Water 70-60 °C		kW	**5,16**	6,30	**7,50**	8,94	**10,25**	**7,55**	9,40	**10,94**	13,06	**14,95**
Dp Cooling **(E)**		kPa	**10,5**	14,5	**19,4**	26,1	**32,6**	**8,9**	12,7	**16,1**	21,1	**25,9**
Dp Heating **(E)**		kPa	**8,5**	12,1	**16,4**	22,2	**28,3**	**7,3**	10,7	**14,0**	19,1	**24,2**
Fan **(E)**		W	**9,0**	13,0	**18,5**	28,5	**41,0**	**16,0**	25,0	**41,0**	65,0	**99,0**
Sound power **(E)**		dB(A)	**37**	43	**48**	53	**57**	**44**	50	**55**	60	**64**
Sound pressure **(*)**		dB(A)	**28**	34	**39**	44	**48**	**35**	41	**46**	51	**55**
1 row heating additional coil (Water 70/60 °C)	Heating **(E)**	kW	**2,65**	3,10	**3,56**	4,13	**4,63**	**3,40**	4,08	**4,62**	5,35	**5,98**
	Dp Heat. **(E)**	kPa	**2,9**	3,9	**4,9**	6,4	**7,8**	**4,6**	6,3	**7,8**	10,1	**12,3**

(E) = EUROVENT certified performance.
(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

www.eurovent-certification.com

Units with 4 row coil

2 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

HEATING (winter mode)
Entering air temperature: +20 °C
Water temperature: +45 °C E.W.T. +40 °C L.W.T.

Model			CRC-ECM 24					CRC-ECM 44					CRC-ECM 64				
Inverter Power **(V)**			1 **(E)**	3	5 **(E)**	7,5	10 **(E)**	1 **(E)**	3	5 **(E)**	7,5	10 **(E)**	1 **(E)**	3	5 **(E)**	7,5	10 **(E)**
Speed			**MIN**		**MED**		**MAX**	**MIN**		**MED**		**MAX**	**MIN**		**MED**		**MAX**
Air flow		m^3/h	**115**	160	**210**	260	**325**	**200**	265	**340**	415	**505**	**290**	375	**475**	590	**720**
Cooling total emission **(E)**		kW	**0,77**	1,06	**1,32**	1,57	**1,86**	**1,43**	1,83	**2,27**	2,71	**3,17**	**2,05**	2,59	**3,19**	3,84	**4,51**
Cooling sensible emission **(E)**		kW	**0,56**	0,78	**0,98**	1,19	**1,42**	**1,03**	1,34	**1,67**	2,02	**2,39**	**1,48**	1,89	**2,34**	2,84	**3,38**
Heating **(E)**		kW	**0,78**	1,08	**1,37**	1,65	**1,98**	**1,42**	1,83	**2,30**	2,77	**3,32**	**2,02**	2,59	**3,23**	3,93	**4,68**
Heating - Water 70-60 °C		kW	**1,57**	2,18	**2,75**	3,33	**4,01**	**2,83**	3,67	**4,59**	5,57	**6,60**	**4,05**	5,21	**6,48**	7,90	**9,43**
Dp Cooling **(E)**		kPa	**3,2**	5,5	**8,0**	11,0	**14,8**	**4,0**	6,1	**8,9**	12,3	**16,1**	**8,2**	12,4	**17,8**	24,8	**33,0**
Dp Heating **(E)**		kPa	**2,6**	4,7	**7,1**	9,9	**13,6**	**3,1**	4,9	**7,3**	10,2	**13,7**	**6,6**	10,3	**15,1**	21,4	**29,1**
Fan **(E)**		W	**7,0**	8,8	**11,0**	14,6	**21,0**	**6,0**	9,0	**12,0**	17,0	**25,0**	**7,0**	10,0	**15,0**	22,0	**32,0**
Sound power **(E)**		dB(A)	**30**	36	**41**	47	**51**	**30**	36	**42**	47	**51**	**33**	38	**44**	49	**54**
Sound pressure **(*)**		dB(A)	**21**	27	**32**	38	**42**	**21**	27	**33**	38	**42**	**24**	29	**35**	40	**45**
1 row heating additional coil (Water 70/60 °C)	Heating **(E)**	kW	**0,81**	1,04	**1,23**	1,42	**1,63**	**1,47**	1,79	**2,11**	2,42	**2,74**	**2,00**	2,40	**2,80**	3,24	**3,68**
	Dp Heat. **(E)**	kPa	**1,3**	1,9	**2,6**	3,4	**4,3**	**4,5**	6,4	**8,5**	10,9	**13,6**	**1,5**	2,1	**2,8**	3,6	**4,5**

Model			CRC-ECM 74					CRC-ECM 94				
Inverter Power **(V)**			1 **(E)**	3	5 **(E)**	7,5	10 **(E)**	1 **(E)**	3	5 **(E)**	7,5	10 **(E)**
Speed			**MIN**		**MED**		**MAX**	**MIN**		**MED**		**MAX**
Air flow		m^3/h	**380**	475	**585**	735	**875**	**575**	755	**910**	1145	**1365**
Cooling total emission **(E)**		kW	**2,61**	3,20	**3,82**	4,61	**5,30**	**3,59**	4,49	**5,21**	6,18	**7,04**
Cooling sensible emission **(E)**		kW	**1,90**	2,34	**2,82**	3,44	**3,99**	**2,69**	3,40	**3,99**	4,81	**5,53**
Heating **(E)**		kW	**2,57**	3,17	**3,84**	4,66	**5,43**	**3,76**	4,81	**5,63**	6,84	**7,93**
Heating - Water 70-60 °C		kW	**5,16**	6,38	**7,73**	9,39	**10,93**	**7,58**	9,69	**11,37**	13,82	**16,03**
Dp Cooling **(E)**		kPa	**7,3**	10,5	**14,3**	20,0	**25,6**	**6,3**	9,3	**12,1**	16,4	**20,8**
Dp Heating **(E)**		kPa	**5,9**	8,6	**12,0**	16,9	**22,0**	**5,6**	8,7	**11,4**	16,1	**20,9**
Fan **(E)**		W	**9,0**	13,0	**18,5**	28,5	**41,0**	**16,0**	25,0	**41,0**	65,0	**99,0**
Sound power **(E)**		dB(A)	**37**	43	**48**	53	**57**	**44**	50	**55**	60	**64**
Sound pressure **(*)**		dB(A)	**28**	34	**39**	44	**48**	**35**	41	**46**	51	**55**
1 row heating additional coil (Water 70/60 °C)	Heating **(E)**	kW	**2,65**	3,10	**3,56**	4,13	**4,63**	**3,40**	4,08	**4,62**	5,35	**5,98**
	Dp Heat. **(E)**	kPa	**2,9**	3,9	**4,9**	6,4	**7,8**	**4,6**	6,3	**7,8**	10,1	**12,3**

(E) = EUROVENT certified performance.
(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

Electronic controls included

MV-MVB model	
CB-T-ECM	Continuous fan speed control with electronic thermostat and summer/winter switch
CB-T-ECM-IAQ	Continuous fan speed control with electronic thermostat and summer/winter switch (version with electrostatic filter)
CB-Touch-M	Automatic speed touch control, fitted on the unit, with electronic thermostat and seasonal/ventilation mode selection (to be used with UP-Touch-M only)
CB-Touch-S	Automatic speed touch control, not fitted on the unit, with electronic thermostat and seasonal/ventilation mode selection (to be used with UP-Touch-S only)
UP-Touch-M	Power unit for CB-Touch-M control, fitted on the unit
UP-Touch-S	Power unit for CB-Touch-S control, not fitted on the unit

Electronic wall controls

MV, MO-MVB and IV-IO models	
WM-AU	Automatic speed control with electronic thermostat and summer/winter switch (to be used with UPM-AU or UP-AU only)
T-MB2	Wall control with LCD color display and WiFi (to be used with UPM-AU or UP-AU only)
WM-503-AC-EC	Automatic speed control with electronic thermostat to be mounted in the 503 box (to be used with UP-503-AC-EC only)
WM-S-ECM	Continuous fan speed control with electronic thermostat, summer/winter switch and LCD display
UPM-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, fitted on the unit
UP-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, not fitted on the unit
UP-503-AC-EC	UP-503-AC-EC power unit for WM-503-AC-EC remote control, not fitted on the unit

Electronic controls for MB boards

MV, MO-MVB and IV-IO models	
MB-ECM-M	MB electronic board fitted on the unit
MB-ECM-S	MB electronic board supplied with separate packaging
T-MB2	Wall control with LCD color display and WiFi (to be used with MB board only)
T-MB2-M	T-MB2 control fitted on the unit, for MV/MVB models (to be used with MB board only)
T-MB2-S	T-MB2 control supplied with separate packaging, for MV/MVB models (to be used with MB board only)
RS-RT03	Infra-red remote control with receiver supplied with separate packaging (to be used with MB board only)
RT03 / RR03	Infra-red remote control supplied with separate packaging (to be used with MB board only)
RT04	Infra-red remote control supplied with separate packaging (to be used with MB board only) - **Available from April 2025**
RS	Receiver for infra-red remote control supplied with separate packaging (to be used with MB board only)
PSM-DI	PSM-DI multifunction control panel (to be used with MB board only)
T-DI	T-DI touch screen multifunction control panel (to be used with MB board only)
SabWeb	Web gateway for Sabiana Cloud (to be used with MB board only)

Sabianet management system for a network of fan coils	
Sabianet	Hardware/software supervisory system (to be used with MB board only)
Router-S	Router for Sabianet (default) or for BMS systems not provided by Sabiana
SIOS	Relay output board for Sabianet

NOTE: for more information about Controls and for full list of main Accessories, please see the dedicated pages.

Controls for KNX systems

KNX systems	
WM-KNX	Wall control with electronic thermostat and summer/winter switch (to be used with UP-KNX and PL mounting plate only)
UP-KNX	UP-KNX power unit supplied with separate packaging
PL-503-B	Mounting plate for rectangular box
PL-QUA-B	Mounting plate for rectangular box

CB-T-ECM control

T-MB2 wall control with LCD color display and WiFi

Digital Touch control

Digital touch control manageable via Wi-Fi and Bluetooth® with the APP available into the Android™ and IOS® version Interfaced with Modbus e KNX home automation systems

Accessories

Kit Breeze accessory
accessory available also for CRC-ECM (see CRC dedicated page)

IAQ accessory
Crystall accessory available also for CRC-ECM (see CRC dedicated page)

Carisma CRT-ECM

(*)

Fan Coil Unit with Tangential Fan with EC Brushless Electronic Motor and Inverter Board

Range includes **5 air flow rates** (from 95 to 900 m^3/h) and **5 models** (for wall and ceiling installation, with casing and concealed), each equipped with 3 row coil and with the possibility to add a 1 row coil for 4 pipe systems.

With electrical consumption less than 8 W on the entire range at the lowest speed, it can be considered to be **the best fan coil on the market** in electrical consumption. Therefore, it is particularly suited whenever there are low environmental thermal requirements and the focus is on consumption and acoustic comfort.

The ECM range makes use of the excellent experience gained with the SkyStar Cassette fan coils with inverter board, first in the world in production since 2009, and which have had great success on all markets.

The innovative **brushless** and **sensorless** type synchronous electronic motor with permanent magnets, is controlled by an inverter board designed and developed in Italy.
The board is mounted on the unit, closed to the motor, without the need to be cooled down by the air flow.

The air flow rate can be varied **in continuous** by means of a 1-10 V signal generated by Sabiana controls or by independent control systems.
The continuous air flow control improves the acoustic comfort and allows a more punctual reply to the variation of the thermal loads and a greater stability of the requested ambient temperature.

(*) See availabilty function on controls.

The extreme efficiency, also at low speed, makes possible a great reduction in electric consumption with absorption values under normal operating conditions that **do not exceed 8 Watt**.
The excellent values in terms of sound levels have been maintained in all working conditions, without any resonance phenomenon at any frequency.

The full compliance with the Electromagnetic Compatibility Directive and with the other strict Standards in force is certified by an independent institutee.

Outer casing: made with strong synthetic lateral corners and from galvanized and prepainted front steel panel. The plastic top grid has fixed louvres and is reversible in order to distribute the air in two different directions.

Standard colours:
- Lateral corners and top grid: **Pantone Cool Grey 1C (light grey)**
- Front panel: **RAL 9003 (white)**
- Other colours on request.

Inner casing: made from 1 mm galvanized steel insulated with 3 mm polyolefin (PO) foam B-s2-d0 EN 13501-1.

Filter: polypropylene cellular fabric regenerating filter. The filter frame of galvanized steel is inserted into special plastic sliding guides fastened to the internal structure for easy insertion and removal of the filter. Filter presence is highlighted by a plastic front cover featuring the same colour as the top grid.

Fan assembly: the tangential fan assembly is composed of two fan shrouds: an external one in ABS and an internal one of perforated, shaped steel. The fan has an external diameter of 120mm and is the length of the coil. The fins are concave and are positioned in a spiral shape along the whole length of the fan.

Electronic motor: three phase permanent magnet brushless electronic motor that is controlled with current reconstructed according to a **BLAC** sinusoidal wave.
The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a **switching system**, it generates a three-phase frequency modulated, wave form power supply.
The electric power supply required for the machine is therefore single-phase with voltage of **230 V** and frequency of **50 - 60 Hz**.

Coil: it is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process. The coil has two 1/2inch BSP internal connections and 1/8 inch BSP air vent and drain. The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.
Flow and return pipe connections are situated at the same end on the left side looking at the unit. On request we can deliver the unit with the connections on the right end side: this must be specified on the order as this operation can not be carried out on site during installation.

Condensate collection tray: made from plastic with an "L"-shaped plastic fitted on the inner casing; in the MO-MVB and IV-IO model the tray is insulated with 3 mm polyolefin (PO) foam B-s2-d0 EN 13501-1.
The outside diameter of the condensate discharge pipe is 15 mm.

(*)

Sabiana WiFi

Sabiana WiFi is the App for the control at a distance of your Sabiana system of climatisation. Free and easy to use, it needs only a wireless network and a smartphone with internet connection.
Using the "Cloud" it allows to manage, program and supervise the status of Your air conditioners wherever You are.

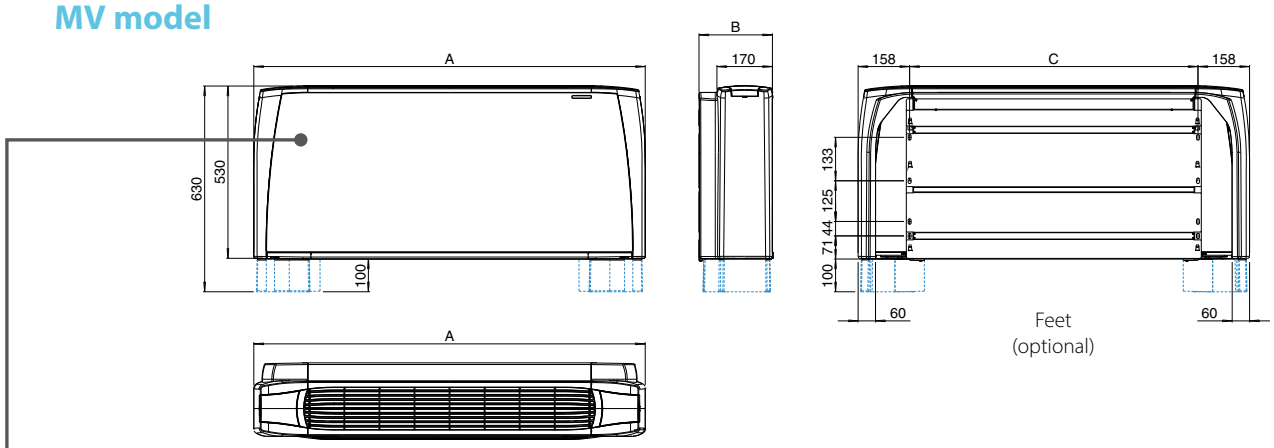
(*)

Sabiana BLE

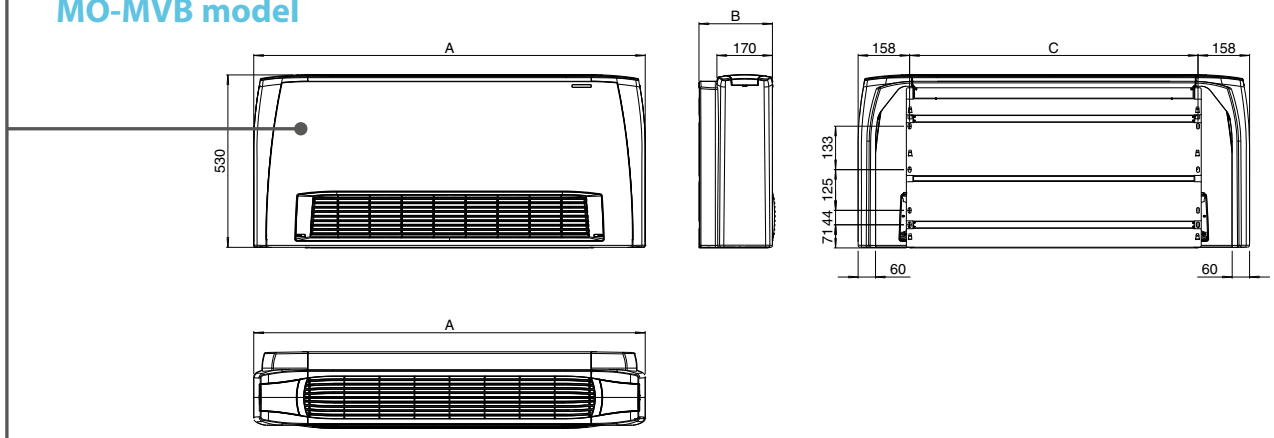
Sabiana BLE is the new App for Android™ and iOS systems to set, manage and control Your climatisation system via Bluetooth Low Energy (BLE) transmission.
Free and easy to configure and use, it needs only a smartphone with a Bluetooth connection (version 4.0 or later versions).

(*) See availabilty function on controls.

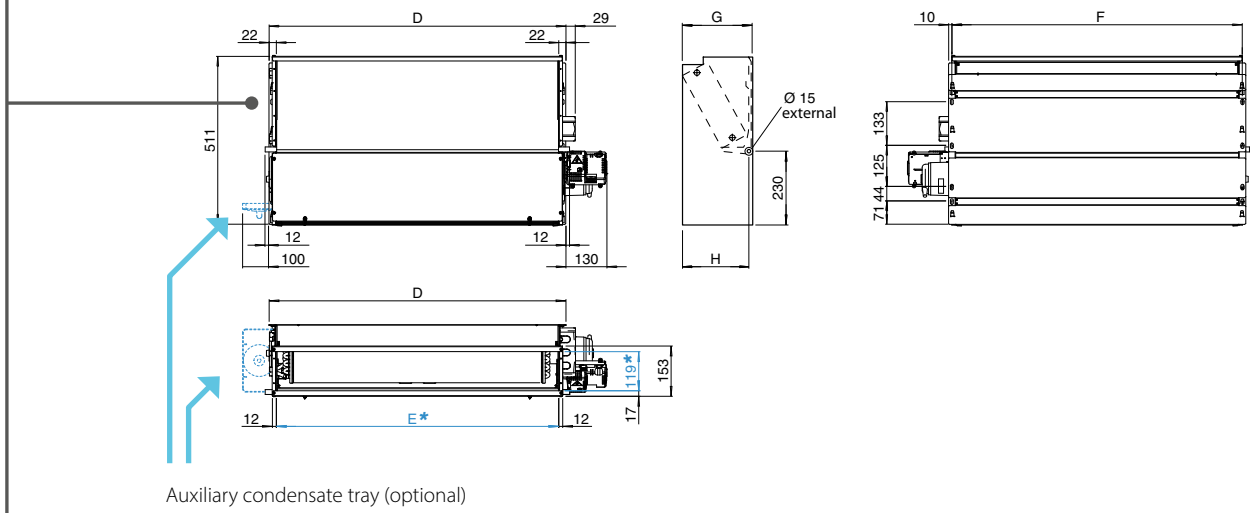
MV model



MO-MVB model



IV-IO model

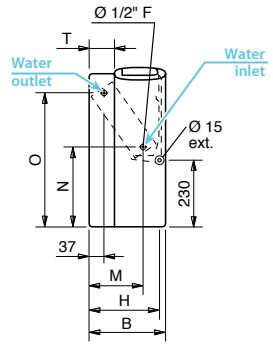
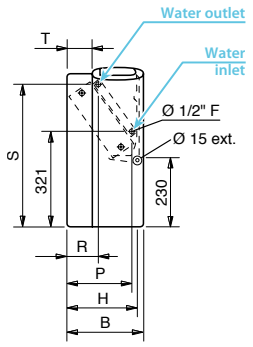
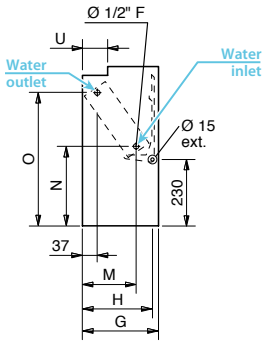
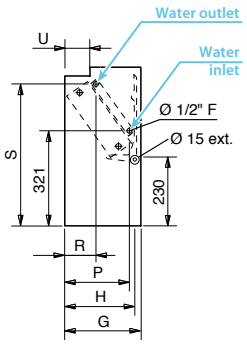


Auxiliary condensate tray (optional)

Coil connections on the left

* Supply frame dimension = E x 119 mm

Coil connections

MV and MO-MVB model		IV-IO model	
3 row coil	Heating additional coil (1 row))	3 row coil	Heating additional coil (1 row)
			

Dimension (mm)

Model	1	2	3	5	7
A	670	770	985	1200	1415
B	225	225	225	225	225
C	354	454	669	884	1099
D	374	474	689	904	1119
E	330	430	645	860	1075
F	354	454	669	884	1099
G	218	218	218	218	218
H	205	205	205	205	205
M	145	145	145	145	145
N	260	260	260	260	260
O	460	460	460	460	460
P	185	185	185	185	185
R	105	105	105	105	105
S	475	475	475	475	475
T	55	55	55	55	55
U	65	65	65	65	65

Weight (kg)

	Model		Weight with packaging					Weight without packaging				
			1	2	3	5	7	1	2	3	5	7
MV MO-MVB	ROWS	**3**	14,8	16,2	19,6	24,2	28,7	13,2	14,4	17,3	21,4	25,4
		3+1	15,5	17,0	20,8	25,7	30,5	13,9	15,2	18,5	22,9	27,2
IV-IO	ROWS	**3**	11,5	12,6	15,3	19,2	23,6	9,9	10,8	13,5	16,9	20,8
		3+1	12,2	13,4	16,5	20,7	25,4	10,6	11,6	14,7	18,4	22,6

Water content (litres)

Model		1	2	3	5	7
ROWS	**3**	0,5	0,6	0,9	1,3	1,7
	3+1	0,2	0,2	0,3	0,4	0,5

www.eurovent-certification.com

Units with 3 row coil

2 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T +12 °C L.W.T.

HEATING (winter mode)
Entering air temperature: +20 °C
Entering water temperature: +45 °C E.W.T +40 °C L.W.T.

Model		CRT-ECM 13			CRT-ECM 23			CRT-ECM 33			CRT-ECM 53			CRT-ECM 73		
Inverter Power **(V)**		1 **(E)**	5 **(E)**	10 **(E)**	1 **(E)**	5 **(E)**	10 **(E)**	1 **(E)**	5 **(E)**	10 **(E)**	1 **(E)**	5 **(E)**	10 **(E)**	1 **(E)**	5 **(E)**	10 **(E)**
Speed		**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**
Air flow	m^3/h	105	165	240	150	215	305	220	325	450	295	460	675	400	630	900
Cooling total emission **(E)**	kW	0,55	0,75	0,98	0,85	1,10	1,40	1,37	1,87	2,36	1,82	2,61	3,46	2,47	3,56	4,63
Cooling sensible emission **(E)**	kW	0,44	0,62	0,85	0,66	0,87	1,14	1,02	1,42	1,83	1,36	2,00	2,71	1,84	2,72	3,61
Heating **(E)**	kW	0,69	0,96	1,29	1,00	1,30	1,68	1,51	2,08	2,65	2,02	2,91	3,92	2,64	3,84	5,11
Heating - Water 70-60 °C	kW	1,39	1,95	2,63	2,01	2,63	3,41	3,05	4,17	5,32	4,07	5,88	7,92	5,31	7,74	10,31
Dp Cooling **(E)**	kPa	0,8	1,4	2,2	2,1	3,4	5,2	7,4	12,9	19,7	4,8	9,1	15,0	9,6	18,2	29,1
Dp Heating **(E)**	kPa	1,0	1,7	2,9	2,4	3,8	5,9	7,2	12,7	19,8	4,8	9,1	15,4	8,9	17,3	28,5
Fan **(E)**	W	4,0	6,0	10,0	4,0	6,0	12,0	5,0	8,0	16,0	6,0	11,0	26,0	7,0	15,0	38,0
Sound power **(E)**	dB(A)	33	39	48	36	43	49	33	42	49	35	46	53	37	48	56
Sound pressure **(*)**	dB(A)	24	30	39	27	34	40	24	33	40	26	37	44	28	39	47

Units with 1 row additional coil

4 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

HEATING (winter mode)
Entering air temperature: +20 °C
Water temperature: +65 °C E.W.T. +55 °C L.W.T.

Model		CRT-ECM 13+1			CRT-ECM 23+1			CRT-ECM 33+1			CRT-ECM 53+1			CRT-ECM 73+1		
Inverter Power **(V)**		1 **(E)**	5 **(E)**	10 **(E)**	1 **(E)**	5 **(E)**	10 **(E)**	1 **(E)**	5 **(E)**	10 **(E)**	1 **(E)**	5 **(E)**	10 **(E)**	1 **(E)**	5 **(E)**	10 **(E)**
Speed		**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**
Air flow	m^3/h	95	150	225	135	195	285	200	295	415	270	420	640	355	565	820
Cooling total emission **(E)**	kW	0,51	0,71	0,94	0,78	1,01	1,33	1,25	1,70	2,20	1,68	2,43	3,32	2,25	3,28	4,31
Cooling sensible emission **(E)**	kW	0,40	0,59	0,80	0,60	0,80	1,08	0,93	1,29	1,71	1,25	1,84	2,59	1,67	2,49	3,33
Heating **(E)**	kW	0,54	0,95	0,95	0,83	1,07	1,37	1,37	1,78	2,21	1,79	2,42	3,21	2,34	3,23	4,14
Dp Cooling **(E)**	kPa	0,8	1,5	2,3	1,8	2,9	4,8	6,1	10,6	16,8	4,2	8,0	14,0	8,2	15,8	25,7
Dp Heating **(E)**	kPa	0,5	1,4	1,4	1,3	2,0	3,1	4,0	6,4	9,5	1,3	2,2	3,6	2,4	4,2	6,5
Fan **(E)**	W	4,0	6,0	10,0	4,0	6,0	12,0	5,0	8,0	16,0	6,0	11,0	26,0	7,0	15,0	38,0
Sound power **(E)**	dB(A)	31	39	48	33	43	49	33	42	49	35	46	53	37	48	56
Sound pressure **(*)**	dB(A)	22	30	39	24	34	40	24	33	40	26	37	44	28	39	47

(E) = EUROVENT certified performance.
(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

Electronic controls included

MV-MVB model	
CB-T-ECM	Continuous fan speed control with electronic thermostat and summer/winter switch
CB-T-ECM-IAQ	Continuous fan speed control with electronic thermostat and summer/winter switch (version with electrostatic filter)
CB-Touch-M	Automatic speed touch control, fitted on the unit, with electronic thermostat and seasonal/ventilation mode selection (to be used with UP-Touch-M only)
CB-Touch-S	Automatic speed touch control, not fitted on the unit, with electronic thermostat and seasonal/ventilation mode selection (to be used with UP-Touch-S only)
UP-Touch-M	Power unit for CB-Touch-M control, fitted on the unit
UP-Touch-S	Power unit for CB-Touch-S control, not fitted on the unit

Electronic wall controls

MV, MO-MVB and IV-IO models	
WM-AU	Automatic speed control with electronic thermostat and summer/winter switch (to be used with UPM-AU or UP-AU only)
T-MB2	Wall control with LCD color display and WiFi (to be used with UPM-AU or UP-AU only)
WM-503-AC-EC	Automatic speed control with electronic thermostat to be mounted in the 503 box (to be used with UP-503-AC-EC only)
WM-S-ECM	Continuous fan speed control with electronic thermostat, summer/winter switch and LCD display
UPM-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, fitted on the unit
UP-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, not fitted on the unit
UP-503-AC-EC	UP-503-AC-EC power unit for WM-503-AC-EC remote control, not fitted on the unit

Electronic controls for MB board

MV, MO-MVB and IV-IO models	
MB-ECM-M	MB electronic board fitted on the unit
MB-ECM-S	MB electronic board supplied with separate packaging
T-MB2	Wall control with LCD color display and WiFi (to be used with MB board only)
T-MB2-M	T-MB2 control fitted on the unit, for MV/MVB models (to be used with MB board only)
T-MB2-S	T-MB2 control supplied with separate packaging, for MV/MVB models (to be used with MB board only)
RS-RT03	Infra-red remote control with receiver supplied with separate packaging (to be used with MB board only)
RT03 / RR03	Infra-red remote control supplied with separate packaging (to be used with MB board only)
RT04	Infra-red remote control supplied with separate packaging (to be used with MB board only) - **Available from April 2025**
RS	Receiver for infra-red remote control supplied with separate packaging (to be used with MB board only)
PSM-DI	PSM-DI multifunction control panel (to be used with MB board only)
T-DI	T-DI touch screen multifunction control panel (to be used with QCV-MB control panel only)
SabWeb	Web gateway for Sabiana Cloud (to be used with QCV-MB control panel only)

Sabianet management system for a network of fan coils	
Sabianet	Hardware/software supervisory system (to be used with MB board only)
Router-S	Router for Sabianet (default) or for BMS systems not provided by Sabiana
SIOS	Relay output board for Sabianet

Controls for KNX systems

KNX systems	
WM-KNX	Wall control with electronic thermostat and summer/winter switch (to be used with UP-KNX and PL mounting plate only)
UP-KNX	UP-KNX power unit supplied with separate packaging
PL-503-B	Mounting plate for rectangular box
PL-QUA-B	Mounting plate for rectangular box

NOTE: for more information about Controls and for full list of main Accessories, please see the dedicated pages.

Carisma CRR-ECM

Residential Fan Coil Unit with Electronic Motor and Inverter Board

Range includes **4 air flow rates** (from 90 to 550 m^3/h) and **2 models** (wall and recessed) both bequipped with 3 row coil.

The **CRR-ECM range** was created to offer a **residential** fan coil with a sophisticated design and low depth **(183 mm)** and a specially silent tangential fan assembly.

(*) See availabilty function on controls.

Outer casing: made with strong synthetic (ABS) lateral corners and from galvanized and prepainted front steel panel. The plastic top air supply grid made of synthetic material, has fixed louvres and is reversible in order to distribute the air in two different directions.

Standard colours:
- Lateral corners and top grid: **Pantone Cool Grey 1C (light grey)**
- Front panel: **RAL 9003 (white)**
- Other colours on request.

Inner casing: made of 1 mm galvanized steel lateral corners and a rear panel insulated with 3 mm polyolefin (PO) foam B-s2-d0 EN 13501-1.

Filter: polypropylene cellular fabric regenerating filter.
The filter frame of galvanized steel is inserted into special plastic sliding guides fastened to the internal structure for easy insertion and removal of the filter. Filter presence is highlighted by a plastic front cover featuring the same colour as the top grid.

Fan assembly: the tangential fan assembly is composed of two fan shrouds: an external one in PVC and an internal one of perforated, shaped steel. The fan has an external diameter of 120 mm and is the length of the coil.
The fins are concave and are positioned in a spiral shape along the whole length of the fan.

Electronic motor: three phase permanent magnet brushless electronic motor that is controlled with current reconstructed according to a **BLAC** sinusoidal wave. The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a **switching system**, it generates a three-phase frequency modulated, wave form power supply. The electric power supply required for the machine is therefore single-phase with voltage of **230 V** and frequency of **50 - 60 Hz**.

Coil: it is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process. The coil has two 1/2 inch BSP internal connections and 1/8 inch BSP air vent and drain.
The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.

Flow and return pipe connections are situated at the same end on the left side looking at the unit.
On request we can deliver the unit with the connections on the right end side: this must be specified on the order as this operation can not be carried out on site during installation.

Condensate collection tray: made from plastic fitted on the inner casing.
The outside diameter of the condensate discharge pipe is 15 mm.

(*)

Sabiana WiFi

Sabiana WiFi is the App for the control at a distance of your Sabiana system of climatisation. Free and easy to use, it needs only a wireless network and a smartphone with internet connection.
Using the "Cloud" it allows to manage, program and supervise the status of Your air conditioners wherever You are.

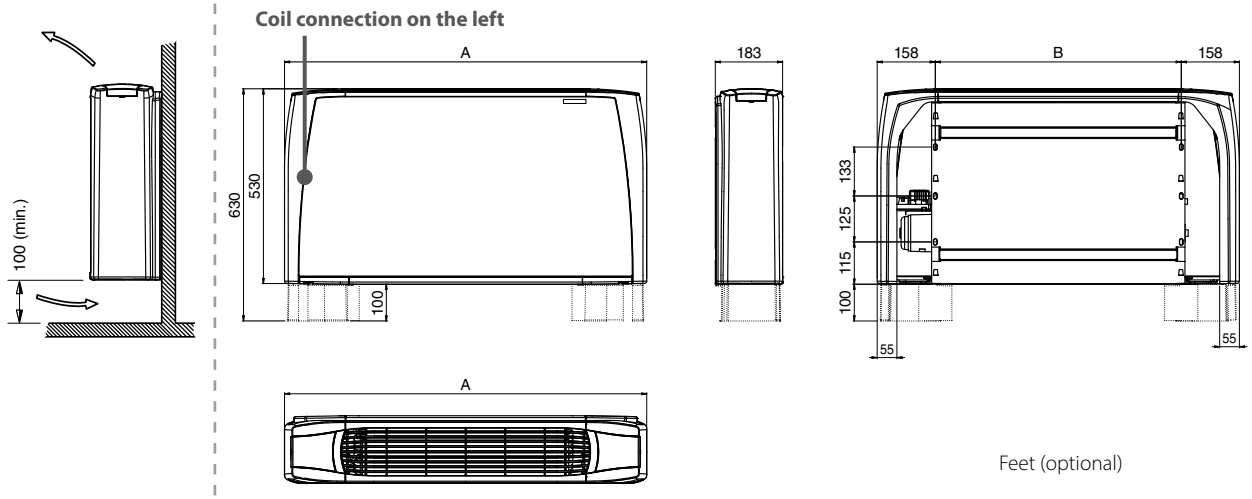
(*)

Sabiana BLE

Sabiana BLE is the new App for Android™ and iOS systems to set, manage and control Your climatisation system via Bluetooth Low Energy (BLE) transmission.
Free and easy to configure and use, it needs only a smartphone with a Bluetooth connection (version 4.0 or later versions).

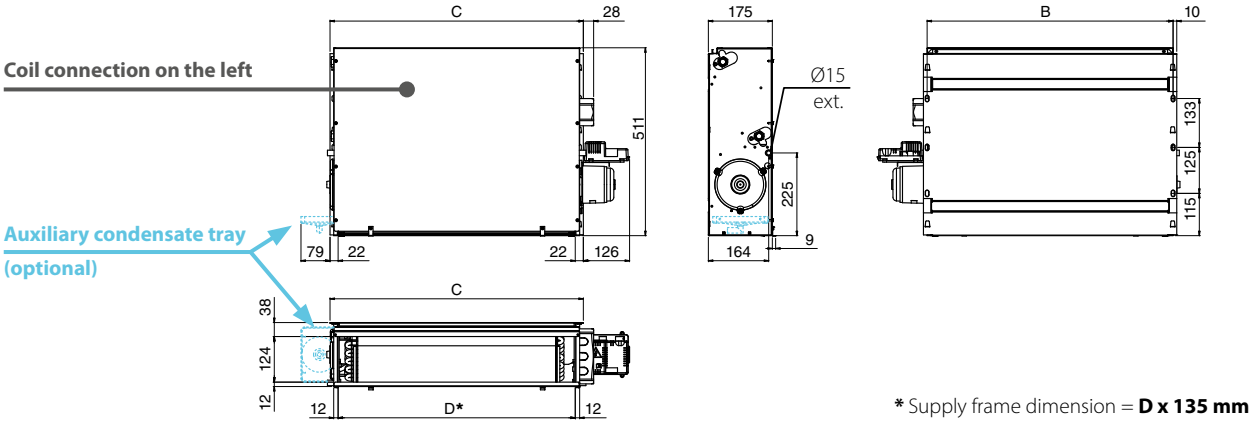
(*) See availabilty function on controls.

MV model



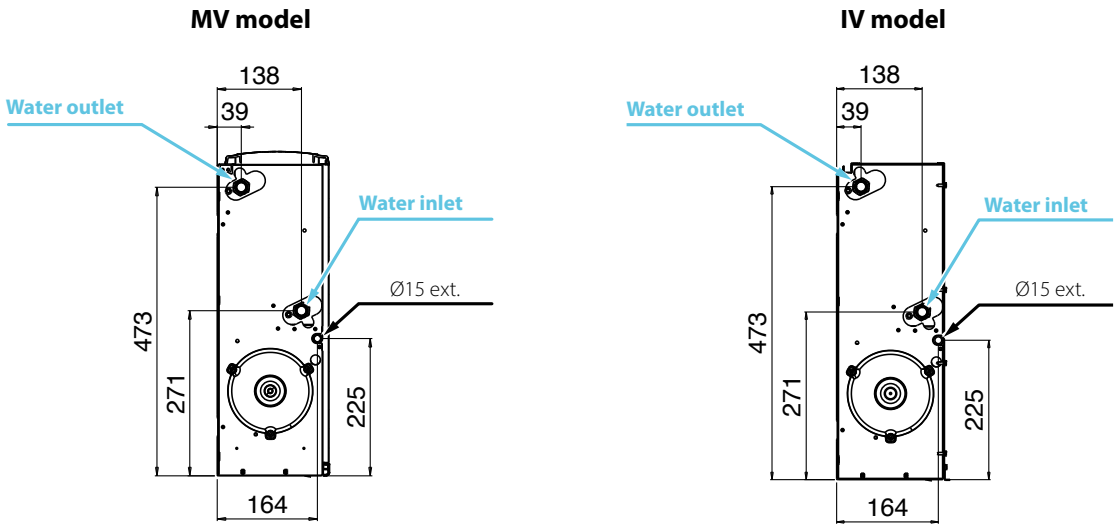
Feet (optional)

IV model



* Supply frame dimension = **D x 135 mm**

Coil connections



Dimension (mm)

Model	1	2	3	4
A	670	770	985	1200
B	354	454	669	884
C	374	474	689	904
D	330	430	645	860

Weight (kg)

	Weight with packaging				Weight without packaging			
Model	1	2	3	4	1	2	3	4
MV model	13,4	15,1	18,9	22,7	11,6	13,1	16,6	20,1
IV model	11,3	13,0	16,8	20,6	9,7	11,2	14,6	18,2

Water content (litres)

Model	1	2	3	4
	0,5	0,6	0,9	1,3

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Units with 3 row coil

2 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

HEATING (winter mode)
Entering air temperature: +20 °C
Entering water temperature: +45/40 °C

Model			CRR-ECM 1					CRR-ECM 2				
Inverter Power **(V)**			1 **(E)**	3	5 **(E)**	7,5	10 **(E)**	1 **(E)**	3	5 **(E)**	7,5	10 **(E)**
Speed			**MIN**		**MED**		**MAX**	**MIN**		**MED**		**MAX**
Air flow		m^3/h	90	120	145	180	210	100	135	170	210	245
Cooling total emission **(E)**		kW	0,51	0,62	0,71	0,81	0,89	0,65	0,81	0,95	1,10	1,21
Cooling sensible emission **(E)**		kW	0,39	0,50	0,58	0,68	0,76	0,47	0,60	0,72	0,85	0,95
Heating **(E)**		kW	0,56	0,67	0,75	0,89	1,00	0,78	0,93	1,09	1,30	1,46
Dp Cooling **(E)**		kPa	0,90	1,30	1,60	2,10	2,40	1,60	2,40	3,20	4,20	5,00
Dp Heating **(E)**		kPa	1,10	1,50	1,90	2,50	3,10	1,80	2,50	3,30	4,50	5,60
Fan **(E)**		W	5	5	6	8	10	5	6	6	8	10
Sound power **(E)**	Lw	dB(A)	32	36	40	44	48	32	36	39	43	47
Sound pressure **(*)**	Lp	dB(A)	23	27	31	35	39	23	27	30	34	38

Model			CRR-ECM 3					CRR-ECM 4				
Inverter Power **(V)**			1 **(E)**	3	5 **(E)**	7,5	10 **(E)**	1 **(E)**	3	5 **(E)**	7,5	10 **(E)**
Speed			**MIN**		**MED**		**MAX**	**MIN**		**MED**		**MAX**
Air flow		m^3/h	170	225	280	350	410	240	320	390	470	550
Cooling total emission **(E)**		kW	1,17	1,45	1,70	1,99	2,20	1,61	2,00	2,30	2,62	2,90
Cooling sensible emission **(E)**		kW	0,83	1,04	1,24	1,47	1,64	1,15	1,45	1,69	1,94	2,17
Heating **(E)**		kW	1,33	1,56	1,82	2,18	2,47	1,85	2,18	2,50	2,90	3,28
Dp Cooling **(E)**		kPa	6,20	9,10	12,20	16,20	19,40	4,40	6,50	8,50	10,70	12,80
Dp Heating **(E)**		kPa	6,30	8,40	11,20	15,50	19,40	4,60	6,20	7,90	10,30	12,90
Fan **(E)**		W	5	7	8	11	15	6	7	10	14	22
Sound power **(E)**	Lw	dB(A)	34	38	42	46	50	34	38	43	48	51
Sound pressure **(*)**	Lp	dB(A)	25	29	33	37	41	25	29	34	39	42

(E) = EUROVENT certified performance. **MIN-MED-MAX** = Standard connected speeds.
(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

Breeze Frame Kit | FOR CARISMA CRR-ECM WALL CONCEALED INSTALLATION

The Carisma Breeze frame kit is available in **3 sizes** and allows the installation of **wall** recessed Carisma CRR-ECM IV model fan coils.
The kit includes a top closing panel that prevents the access to technical spaces and coil ensuring **the safety of the end user**.

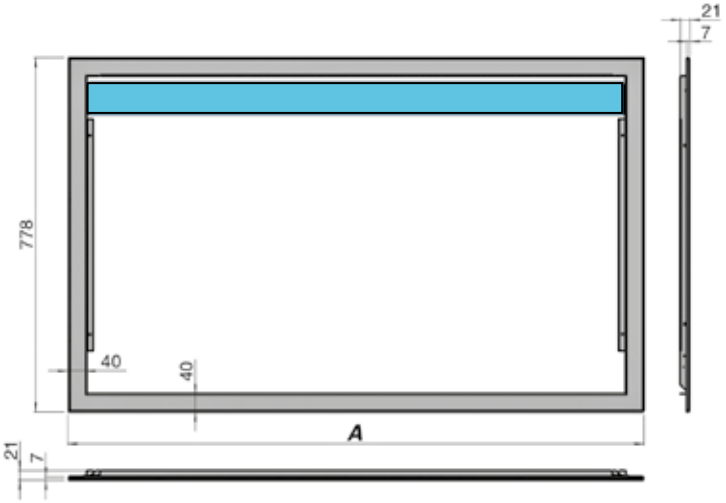
The aesthetic frame includes:
- the closing frame;
- air supply louvre;
- front panel;
- air intake grid.

The air supply louvre is made of extruded aluminum with satin finish.

Perimeter frame, front panel and **intake grid** are made of steel painted with epoxy polyester coat, dried in a furnace at 180 °C, colour RAL 9003. It is possible to repaint the entire frame of the same color as the wall.

The recessed box is made of galvanized steel with openings for the electrical and hydraulic connections.

Aesthetic frame dimensions



Size	Dimension A
2	837
3	1052
4	1267

Breeze Frame Kit | CRYSTALL

The **Crystall** Sabiana electrostatic filter matches the need for better air conditioning with the concepts of space and design. With this filter the various stages of air treatment are combined in one unit. Thanks to this new patented filter (efficiency compliant with EN 16890), air pollutants such as cigarette smoke, dust (PM_{10}, $PM_{2.5}$), pollen and most biological organisms are eliminated.

In addition, as fresh air is not being introduced to obtain the best climatic conditions, there are consequential energy savings.

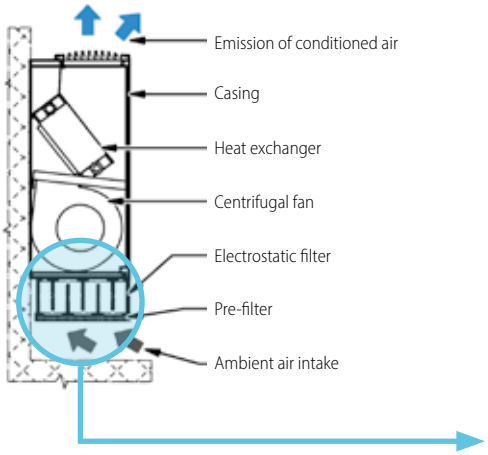
Operating principle of the Crystall Sabiana electrostatic filter

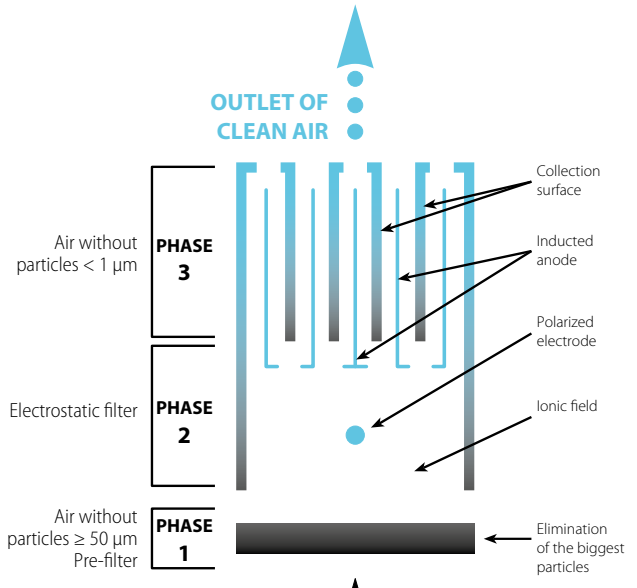
The air is aspirated in and first passes a mechanical prefilter, which stops away particles of more than 50 µm (dust, insects, etc.) **(Phase 1)**.

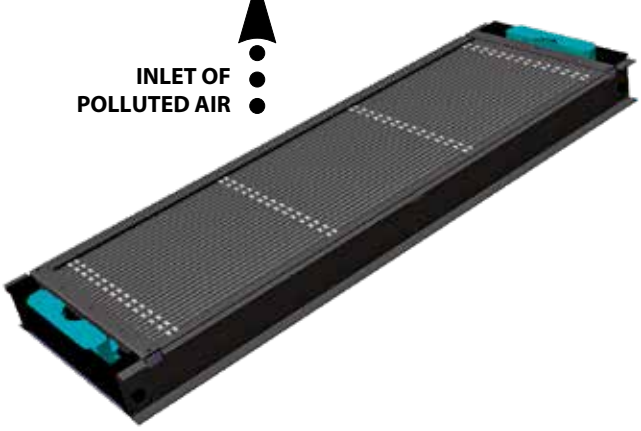
Then the smallest particles (50÷0.01 µm) are exposed to an intensive ionic field and are polarized **(Phase 2)**.

The charged particles passing through the second filter section, are pushed back by the anode and attracted by the collection surfaces by a strong, inducted magnetic field **(Phase 3)**.

The air which leaves the unit is free from polluting particles.







On board controls

MV model	
CB-T-ECM	Continuous fan speed control with electronic thermostat and summer/winter switch
CB-T-ECM-IAQ	Continuous fan speed control with electronic thermostat and summer/winter switch (version with electrostatic filter)
CB-Touch-M	Automatic speed touch control, fitted on the unit, with electronic thermostat and seasonal/ventilation mode selection (to be used with UP-Touch-M only)
CB-Touch-S	Automatic speed touch control, not fitted on the unit, with electronic thermostat and seasonal/ventilation mode selection (to be used with UP-Touch-S only)
UP-Touch-M	Power unit for CB-Touch-M control, fitted on the unit
UP-Touch-S	Power unit for CB-Touch-S control, not fitted on the unit

Electronic wall controls

MV and IV models	
WM-AU	Automatic speed control with electronic thermostat and summer/winter switch (to be used with UPM-AU or UP-AU only)
T-MB2	Wall control with LCD color display and WiFi (to be used with UPM-AU or UP-AU only)
WM-503-AC-EC	Automatic speed control with electronic thermostat to be mounted in the 503 box (to be used with UP-503-AC-EC only)
WM-S-ECM	Continuous fan speed control with electronic thermostat, summer/winter switch and LCD display
UPM-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, fitted on the unit
UP-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, not fitted on the unit
UP-503-AC-EC	UP-503-AC-EC power unit for WM-503-AC-EC remote control, not fitted on the unit

Electronic controls for MB board

MB-ECM-S	MB electronic board supplied with separate packaging
T-MB2	Wall control with LCD color display and WiFi (to be used with MB board)

Controls for KNX systems

KNX systems	
WM-KNX	Wall control with electronic thermostat and summer/winter switch (to be used with UP-KNX and PL mounting plate only)
UP-KNX	UP-KNX power unit supplied with separate packaging
PL-503-B	Mounting plate for rectangular box
PL-QUA-B	Mounting plate for round or square box

NOTE: for more information about Controls and for full list of main Accessories, please see the dedicated pages.

Carisma Whisper CFF-ECM

Residential Fan Coil Unit

Range includes 5 air flow rates (from 75 to 645 m^3/h) and 2 versions (standard with casing and for concealed installation), each one equipped with 2 row coil.

The Carisma Whisper CFF-ECM fan coil unit combines a reduced dimension with a modern aesthetic, while maintaining great performances in terms of sound and consumption.
Carisma Whisper CFF-ECM includes the MV version for wall installation and the IV version for concealed installation; the MV version combines a reduced dimension, until 126 mm depth only, with a modern aesthetic that perfectly suits with any kind of furnishing, while maintaining great performances in terms of sound and consumption.

The Carisma CFF-ECM range is equipped with a synchronous inverter driven BLAC brushless and sensorless electronic motor with permanent magnets, controlled by an inverter board designed and developed in Italy. The air flow can be varied continuously with a 1-10 V signal.

The extreme efficiency, also at a low speed, makes possible a great reduction in electric consumption with absorption values, under normal operating conditions, that are no greater than 5 Watt.
The excellent values in terms of sound levels have been maintained in all working conditions, without any resonance phenomenon at any frequency.

The CB-Touch EASY or CB-Touch advanced controls with Bluetooth and Wi-Fi features allow the management via APP and moreover make this fan coil unit the ideal solution for the air-conditioning of all residential ambients.

Outer casing: made of galvanized steel and with plastic outer casing. The air diffuser, that is placed over the top of the unit, is of adjustable type. White RAL 9003 color.

Inner casing: made of 1 mm galvanized steel, a rear panel and two lateral sides insulated with 3 mm polyolefin (PO) foam B-s2-d0 EN 13501-1.

Filter: polypropylene cellular fabric regenerating filter. The filter frame, made of synthetic material, is inserted into special plastic sliding guides fastened to the internal structure for easy insertion and removal of the filter.

Fan assembly: made of plastic tangential fan with anti-vibration fins. The fan hub, dynamycally and statically balanced, is directly secured onto the motor shaft.

Synchronous brushless electronic motor: with three phase permanent magnet that is controlled with reconstructed current according to a BLAC sinusoidal wave. The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a switching system, it generates a three-phase frequency modulated, wave form power supply. The electric power supply required for the machine is therefore single-phase with voltage of 230 V and frequency of 50 - 60 Hz.

Coil: it is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process. The coil has two Ø 1/2 inch BSP internal connections. The coil has Ø 1/8 inch BSP air vent and drain. The heat exchanger is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.
Flow and return pipe connections are situated at the same end on the left side looking at the unit. On request we can deliver the unit with the connections on the right end side: this must be specified on the order as this operation can not be carried out on site during installation.

Radiant panel (CFF-ECM-MVR-CB-T / CFF-ECM-MV-R-CB-TES version)
The casing front panel is equipped with electric heating panel at low energy consumption, that allows to heat the room successfully by reducing the fan operation, thanks to the irradiation contribution.

Valves: The versions without valves or with mounted valves are available for all sizes. The available valves are: 2 way and 3 way. The valves can be ordered separately and easily installed on the basic units without valves.

Condensate collection tray: made of plastic (ABS UL94 HB) and fixed to the internal structure. The outside diameter of the condensate discharge pipe is Ø 15 mm.

(*)

Sabiana WiFi

Sabiana WiFi is the App for the control at a distance of your Sabiana system of climatisation. Free and easy to use, it needs only a wireless network and a smartphone with internet connection.
Using the "Cloud" it allows to manage, program and supervise the status of Your air conditioners wherever You are.

(*)

Sabiana BLE

Sabiana BLE is the new App for Android™ and iOS systems to set, manage and control Your climatisation system via Bluetooth Low Energy (BLE) transmission.
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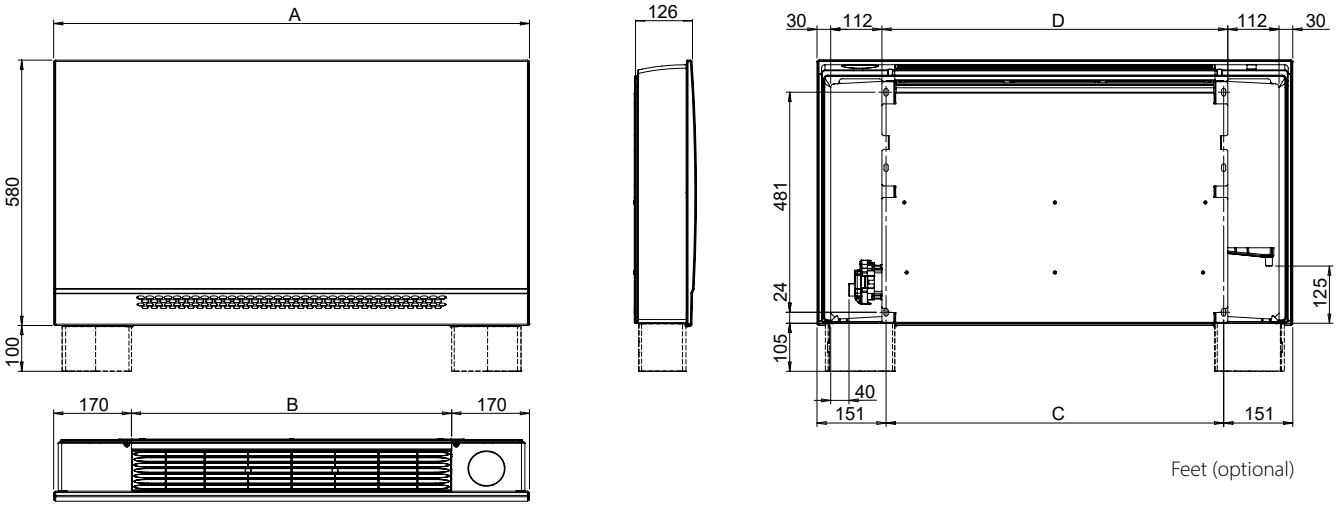
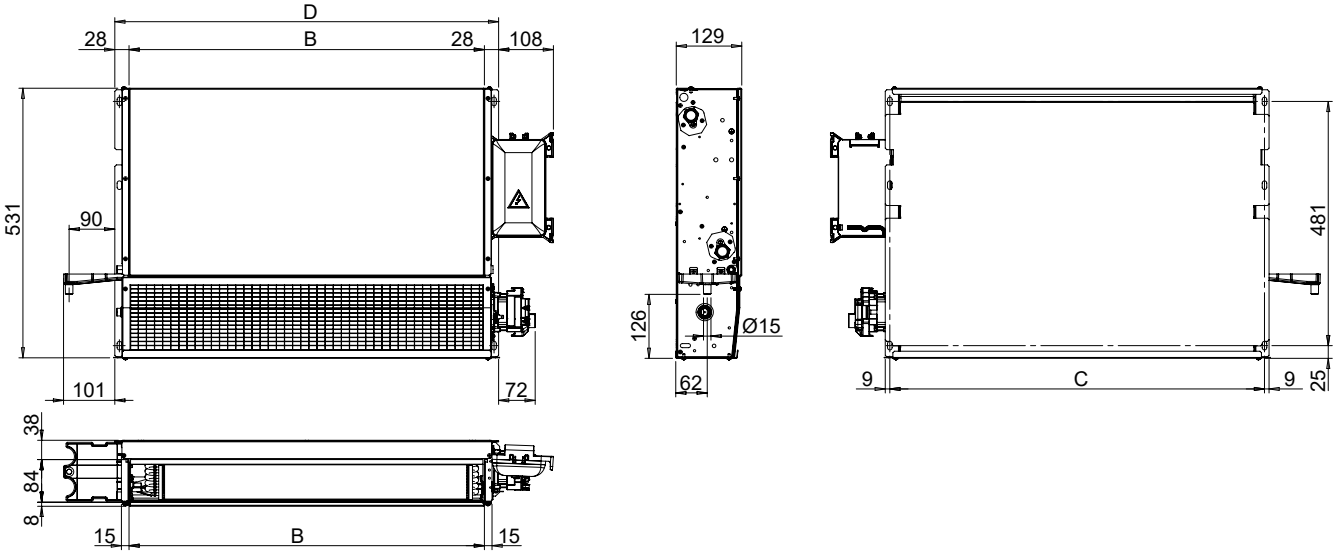
(*) See availabilty function on controls.

Standard version with casing - MV / MV-R



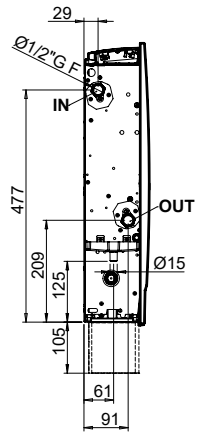
Feet (optional)

Version for concealed installation - IV

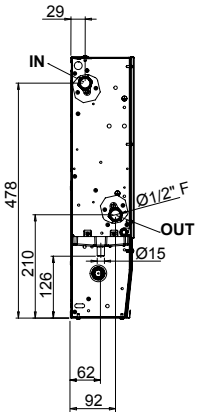


Coil connections

MV / MV-R version



IV version



Dimension (mm)

Model	10	20	30	40	50
A	640	840	1040	1240	1440
B	300	500	700	900	1100
C	338	538	738	938	1138
D	356	556	756	956	1156

Weight (kg)

	Weight with packaging					Weight without packaging				
Model	**10**	**20**	**30**	**40**	**50**	**10**	**20**	**30**	**40**	**50**
MV version	11,6	14,9	18,5	21,9	25,7	10,1	13,2	16,4	19,6	23,0
MV-R version	12,1	16,1	20,3	24,9	29,4	10,5	14,2	18,1	27,5	26,6
IV version	10,1	13,6	17,3	20,9	24,9	8,5	11,7	15,1	18,5	22,1

Water content (litres)

Model	10	20	30	40	50
	0,4	0,7	1,1	1,4	1,7

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The following standard rating conditions are used:

COOLING
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

HEATING
Entering air temperature: +20 °C
Water temperature: +45 °C E.W.T. +40 °C L..W.T.

Model		CFF-ECM 10						CFF-ECM 20						CFF-ECM 30					
Inverter power		1	2	3,5	5	7,5	10	1	2	3,5	5	7,5	10	1	2	3,5	5	7,5	10
			MIN		**MED**		**MAX**		**MIN**		**MED**		**MAX**		**MIN**		**MED**		**MAX**
Eurovent certified performances		-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**
Air flow	m^3/h	75	90	110	130	170	205	125	145	175	205	255	305	190	225	270	315	395	470
Cooling total emission **(E)**	kW	0,40	0,48	0,58	0,66	0,80	0,92	0,67	0,83	1,01	1,15	1,39	1,62	0,92	1,08	1,56	1,91	2,30	2,61
Cooling sensible emission **(E)**	kW	0,30	0,36	0,44	0,52	0,64	0,75	0,50	0,62	0,76	0,88	1,08	1,28	0,67	0,79	1,15	1,41	1,72	1,99
Heating emission **(E)**	kW	0,55	0,60	0,68	0,78	0,96	1,10	0,97	1,01	1,16	1,32	1,57	1,81	1,52	1,62	1,85	2,10	2,53	2,90
Dp Cooling **(E)**	kPa	4,9	6,0	7,5	9,1	12,0	14,7	3,1	3,6	4,3	4,9	6,1	7,4	4,5	5,4	8,6	11,5	15,2	18,6
Dp Heating **(E)**	kPa	6,1	6,7	8,0	9,6	13,0	16,2	3,7	3,9	4,4	5,0	6,1	7,3	7,1	7,7	9,2	11,0	14,6	18,2
Motor power input **(E)**	W	3,2	3,5	4,2	5,2	7,4	10,3	3,7	4,0	4,9	6,3	9,5	14,0	4,1	4,8	6,3	8,6	14,1	21,6
Sound power (Lw)) **(E)**	dB(A)	31	33	36	40	45	50	30	33	38	42	47	52	32	34	39	43	47	53
Sound pressure (Lp) (1)	dB(A)	22	24	27	31	36	41	21	24	29	33	38	43	23	25	30	34	38	44

Model		CFF-ECM 40						CFF-ECM 50					
Inverter power		1	2	3,5	5	7,5	10	1	2	3,5	5	7,5	10
			MIN		**MED**		**MAX**		**MIN**		**MED**		**MAX**
Eurovent certified performances		-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**
Air flow	m^3/h	220	260	320	380	480	575	255	300	365	430	535	645
Cooling total emission **(E)**	kW	1,14	1,45	2,06	2,50	2,97	3,36	1,44	1,95	2,55	2,92	3,37	3,81
Cooling sensible emission **(E)**	kW	0,82	1,05	1,48	1,80	2,17	2,49	1,04	1,40	1,82	2,10	2,47	2,83
Heating emission **(E)**	kW	1,79	1,91	2,23	2,58	3,13	3,62	2,19	2,25	2,61	3,00	3,60	4,20
Dp Cooling **(E)**	kPa	7,3	10,2	17,3	23,7	31,7	39,1	4,6	6,4	9,1	11,2	13,9	16,9
Dp Heating **(E)**	kPa	11,7	12,9	16,3	20,6	28,3	36,2	6,4	6,6	8,0	9,7	12,8	16,2
Motor power input **(E)**	W	4,7	5,4	7,2	9,9	16,4	25,4	5,3	6,1	8,2	11,4	19,0	29,5
Sound power (Lw)) **(E)**	dB(A)	33	37	41	45	51	55	34	38	42	46	51	55
Sound pressure (Lp) (1)	dB(A)	24	28	32	36	42	46	25	29	33	37	42	46

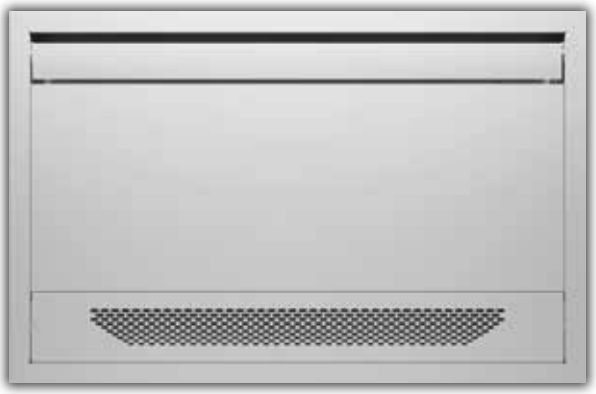
(E) Eurovent certified performance
(1) The sound pressure levels are 9 dB (A) lower than the sound power levels, apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec

Radiant panel heating emission

Model	Ph* kW
CFF-ECM-MV-R10	0,06
CFF-ECM-MV-R20	0,09
CFF-ECM-MV-R30	0,12
CFF-ECM-MV-R40	0,15
CFF-ECM-MV-R50	0,18

*Additional emission once the panel is activated

Kit Breeze | BREEZE FRAME KIT FOR WALL CONCEALED INSTALLATION



The kit is available in **3 sizes** and allows the **wall** installation of the recessed Carisma Whisper IV version (20 - 30 - 40) fan coil units.
The kit includes a top closing panel that prevents the access to technical spaces and coil ensuring **the safety of the end user.**

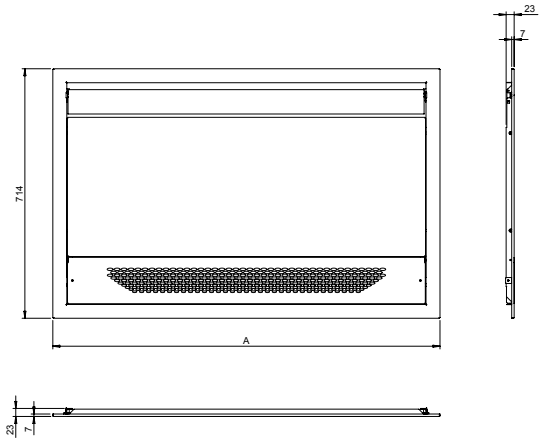
The aesthetic frame includes:
- the closing frame;
- the air supply louvre;
- the front panel;
- the air intake grid.

The air supply louvre is made of extruded aluminium and painted with epoxy polyester coat, dried in a furnace at 180 °C , colour RAL 9003.

Perimeter frame, front panel and air intake grid made of steel painted with epoxy polyester coat, dried in a furnace at 180 °C, colour RAL 9003. It is possible to repaint the entire frame of the same color as the wall.

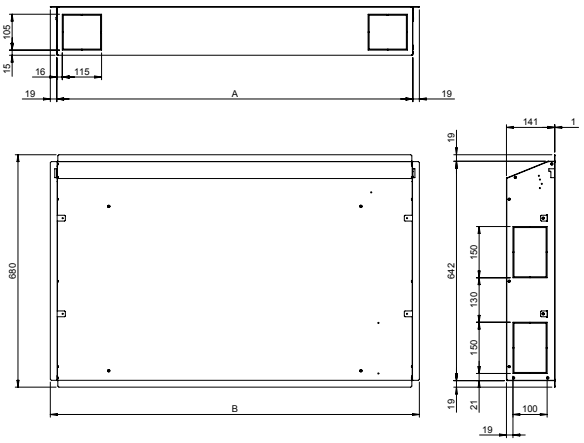
The recessed box is made of galvanized steel with openings for the electrical and hydraulic connections.

Aesthetic frame dimensions



Size	A mm
20	908
30	1108
40	1308

Recessed box dimensions



Size	A mm	B mm
20	842	880
30	1042	1080
40	1242	1280

On board controls

MV / MV-R version	
CB-Touch EASY	Automatic speed touch EASY control with electronic thermostat and seasonal/ventilation mode selection (to be used with UP-Touch EASY power unit only)
CB-Touch	Automatic speed on board touch control with WiFi/BLE connectivity with electronic thermostat and ventilation/summer/winter switch (to be used with UP-Touch power unit only)
UP-Touch EASY	UP-Touch power unit kit supplied with separate packaging, for CB-Touch EASY on board control
UP-Touch	UP-Touch power unit supplied with separate packaging, for CB-Touch on board control

Wall controls

MV / MV-R and IV version	
WM-AU	Automatic speed wall control with electronic thermostat and summer/winter switch (to be used with UP-Touch power unit only) (1)
T-MB2	Wall control with LCD color display and WiFi (to be used with UP-Touch power unit or MB board only) (1)
UP-Touch	UP-Touch power unit supplied with separate packaging, for WM-AU and T-MB2 wall controls
WM-503-AC-EC	Automatic speed control with electronic thermostat to be mounted in the 503 box (to be used with UP-503-AC-EC only)
UP-503-AC-EC	Power unit UP-503 not fitted on the unit, for WM-503-AC-EC remote control (to be used with Kit 503-KNX only)

Controls for MB board or UP-Touch power unit (1) (2)

MB-CF-M	MB electronic board fitted on the unit
MB-CF-S	MB electronic board supplied with separate packaging
T-MB2	Wall control with LCD color display and WiFi (to be used with UP-Touch power unit or MB board only) (1)
PSM-DI	PSM-DI multifunction control panel (to be used with UP-Touch power unit or MB board only) (1)
T-DI	T-DI touch screen multifunction control panel (to be used with UP-Touch power unit or MB board only) (1)
SabWeb	Web gateway for Sabiana Cloud (to be used with UP-Touch power unit or MB board only) (1)

Management system for a network of fan coils with MB electronic board	
Sabianet	Hardware/software supervisory system (to be used with UP-Touch power unit or MB board only) (1)
Router-S	Router for Sabianet (default) or for BMS systems not provided by Sabiana
SIOS	Relay output board

(1) Not to be used with UP-Touch EASY power unit
(2) To the UP-Touch power unit max. 15 units can be connected

Controls for KNX systems

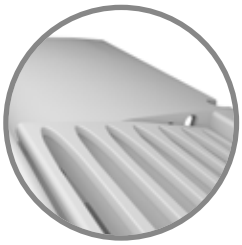
WM-KNX	Wall control with electronic thermostat and summer/winter switch (to be used with UP-KNX and PL mounting plate only)
UP-KNX	UP-KNX power unit supplied with separate packaging (to be used with Kit 503-KNX only)
PL-503-B	Mounting plate for wall rectangular box
PL-QUA-B	Mounting plate for wall round or square box

NOTE: for more detailed information about Controls and for the complete list of the main Accessories, see the dedicated pages.

Digital touch control manageable via Wi-Fi and Bluetooth® with the app available into the Android™ and IOS® version

Interfaced with Modbus e KNX home automation systems

Adjustable grid for the maximum comfort towards the air flow



Tangential fan: strength and silent at the same time

The double aspiration reduces the noise and maximizes the emissions

Available also into the recessed box version and with Kit Breeze

Maximum performance, compact dimension: there is not such efficient and compact fan coil unit on the market

EC motor with inverter at low energy consumption

Controls and valves already assembled: easier installation

Electronic board with contacts for the activation of boiler or heat pump

Carisma Whisper CFF-ECM-MVM

Residential Fan coil units

(*)

The range includes 5 sizes (from 75 to 645 m³/h) with 2 row coil.

The Carisma Whisper CFF-ECM-MVM fan coil, thanks to the casing made entirely of metal with the outlet grid of anodized aluminium, combines a reduced dimension with a modern aesthetic, while maintaining great performances in terms of sound and consumption.

The CFF-ECM-MVM combines a reduced dimension, (130 mm depth), with a modern aesthetic that perfectly suits with any kind of furnishing, while maintaining great performances in terms of sound and consumption.

The Carisma CFF-ECM-MVM range is equipped with BLAC brushless and sensorless type synchronous electronic motor with permanent magnets, controlled by an inverter board designed and developed in Italy. The air flow rate can be varied in continuous by means of a 1-10 V signal.

The extreme efficiency, also at a low speed, makes possible a great reduction in electric consumption with absorption values, under normal operating conditions, that are no greater than 5 Watt.
The excellent values in terms of sound levels have been maintained in all working conditions, without any resonance phenomenon at any frequency.

The advanced controls CB-Touch EASY or CB-Touch with Bluetooth and Wi-Fi technology, together with the possibility of management via APP, make this fan coil unit the ideal solution for the air-conditioning of all residential ambients.

Outer casing: The casing is made entirely of metal with the outlet grid of anodized aluminium, all of beautiful design and great strength. White RAL 9003.

Inner casing: Made of 1 mm galvanized steel, a rear panel and two lateral sides insulated with 3 mm polyolefin (PO) foam (B-s2-d0 EN 13501-1).

Filter: Polypropylene cellular fabric regenerating filter. The filter frame, made of synthetic material, is inserted into special plastic sliding guides fastened to the internal structure for easy insertion and removal of the filter.

Fan assembly: Made of plastic tangential fan with anti-vibration fins. The fan hub, dynamycally and statically balanced, is directly secured onto the motor shaft.

Three phase permanent magnet DC brushless electronic motor that is controlled with current reconstructed according to a BLAC sinusoidal wave. The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a switching system, it generates a three-phase frequency modulated, wave form power supply. The electric power supply required for the machine is therefore single-phase with voltage of 230 - 240 V and frequency of 50 - 60 Hz.

Coil: It is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process. The coil has two Ø 1/2 inch BSP internal connections. The coil has Ø 1/8" inch BSP air vent and drain. The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.
Flow and return pipe connections are situated at the same end on the left side looking at the unit. On request we can deliver the unit with the connections on the right end side: this must be specified on the order as this operation can not be carried out on site during installation.

Valves: The versions without valves or with mounted valves are available for all sizes.
The available valves are of 2- or 3-way type. The valves can be ordered separately and easily installed on the basic units without valves.

Condensate collection tray: Made of plastic (ABS UL94 HB) and fixed to the internal structure. The outside diameter of the condensate discharge pipe is Ø 15 mm.

(*)

Sabiana WiFi, il clima amico sempre con te

Sabiana WiFi is the App for the control at a distance of your Sabiana system of-climatisation. Free and easy to use, it needs only a wireless network and a smartphone with internet connection.
Using the "Cloud" it allows to manage, program and supervise the status of Your air conditioners wherever You are.

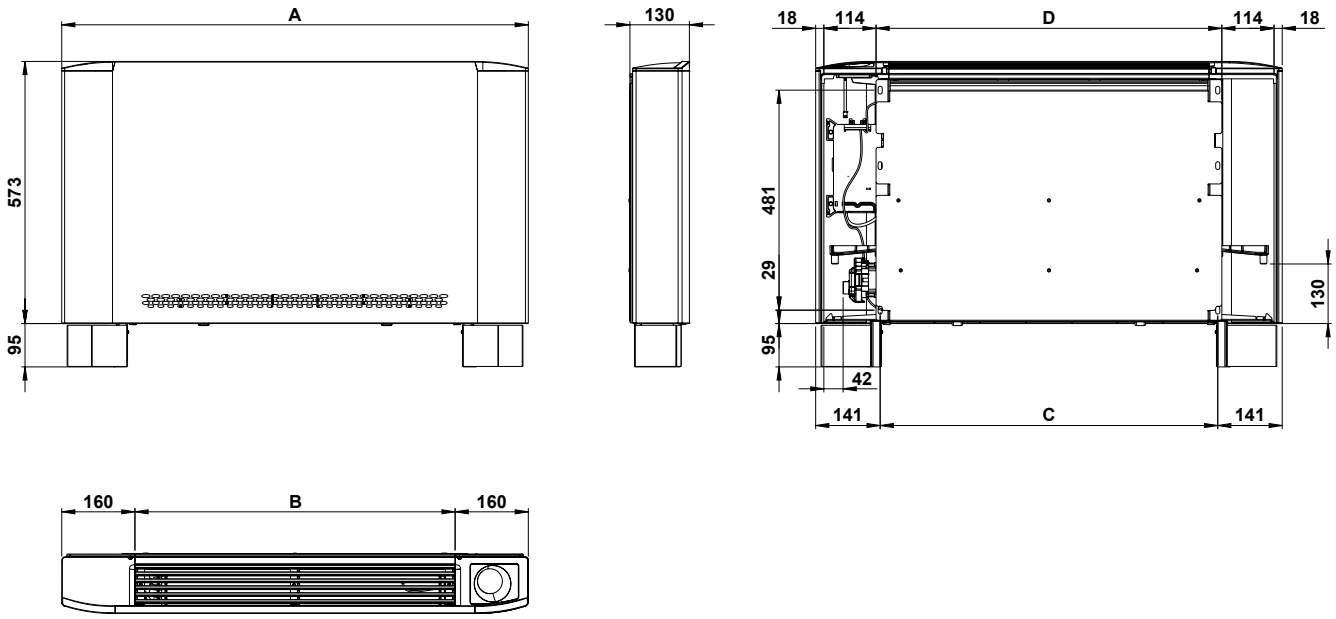
(*)

Sabiana BLE, il clima a portata di mano

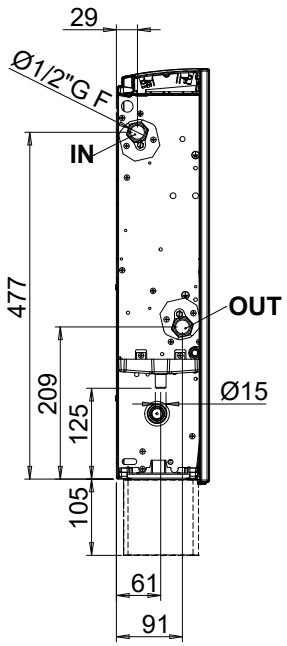
Sabiana BLE is the new App for Android™ and iOS systems to set, manage and control Your climatisation system via Bluetooth Low Energy (BLE) transmission.
Free and easy to configure and use, it needs only a smartphone with a Bluetooth connection (version 4.0 or later versions).

(*) See availabilty function on controls.

Standard version with casing



Coil connections



Dimension (mm)

Model	10	20	30	40	50
A	620	820	1020	1220	1420
B	300	500	700	900	1100
C	338	538	738	938	1138
D	356	556	756	956	1156

Weight (kg)

	Weight with packaging					Weight without packaging				
Model	**10**	**20**	**30**	**40**	**50**	**10**	**20**	**30**	**40**	**50**
	13,0	16,4	20,3	23,9	27,9	11,5	14,7	18,2	21,6	25,2

Water content (litres)

Model	10	20	30	40	50
	0,4	0,7	1,1	1,4	1,7

www.eurovent-certification.com

The following standard rating conditions are used:

COOLING
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

HEATING
Entering air temperature: +20 °C
Water temperature: +45 °C E.W.T. +40 °C L.W.T.

Model		CFF-ECM-MVM 10						CFF-ECM-MVM 20						CFF-ECM-MVM 30					
Inverter power		1	2	3,5	5	7,5	10	1	2	3,5	5	7,5	10	1	2	3,5	5	7,5	10
			MIN		**MED**		**MAX**		**MIN**		**MED**		**MAX**		**MIN**		**MED**		**MAX**
Eurovent certified performances		-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**
Air flow	m^3/h	75	90	110	130	170	205	125	145	175	205	255	305	190	225	270	315	395	470
Cooling total emission **(E)**	kW	0,40	0,48	0,58	0,66	0,80	0,92	0,67	0,83	1,01	1,15	1,39	1,62	0,92	1,08	1,56	1,91	2,30	2,61
Cooling sensible emission **(E)**	kW	0,30	0,36	0,44	0,52	0,64	0,75	0,50	0,62	0,76	0,88	1,08	1,28	0,67	0,79	1,15	1,41	1,72	1,99
Heating emission **(E)**	kW	0,55	0,60	0,68	0,78	0,96	1,10	0,97	1,01	1,16	1,32	1,57	1,81	1,52	1,62	1,85	2,10	2,53	2,90
Dp Cooling **(E)**	kPa	4,9	6,0	7,5	9,1	12,0	14,7	3,1	3,6	4,3	4,9	6,1	7,4	4,5	5,4	8,6	11,5	15,2	18,6
Dp Heating **(E)**	kPa	6,1	6,7	8,0	9,6	13,0	16,2	3,7	3,9	4,4	5,0	6,1	7,3	7,1	7,7	9,2	11,0	14,6	18,2
Motor power input **(E)**	W	3,2	3,5	4,2	5,2	7,4	10,3	3,7	4,0	4,9	6,3	9,5	14,0	4,1	4,8	6,3	8,6	14,1	21,6
Sound power (Lw)) **(E)**	dB(A)	31	33	36	40	45	50	30	33	38	42	47	52	32	34	39	43	47	53
Sound pressure (Lp) [1]	dB(A)	22	24	27	31	36	41	21	24	29	33	38	43	23	25	30	34	38	44

Model		CFF-ECM-MVM 40						CFF-ECM-MVM 50					
Inverter power		1	2	3,5	5	7,5	10	1	2	3,5	5	7,5	10
			MIN		**MED**		**MAX**		**MIN**		**MED**		**MAX**
Eurovent certified performances		-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**
Air flow	m^3/h	220	260	320	380	480	575	255	300	365	430	535	645
Cooling total emission **(E)**	kW	1,14	1,45	2,06	2,50	2,97	3,36	1,44	1,95	2,55	2,92	3,37	3,81
Cooling sensible emission **(E)**	kW	0,82	1,05	1,48	1,80	2,17	2,49	1,04	1,40	1,82	2,10	2,47	2,83
Heating emission **(E)**	kW	1,79	1,91	2,23	2,58	3,13	3,62	2,19	2,25	2,61	3,00	3,60	4,20
Dp Cooling **(E)**	kPa	7,3	10,2	17,3	23,7	31,7	39,1	4,6	6,4	9,1	11,2	13,9	16,9
Dp Heating **(E)**	kPa	11,7	12,9	16,3	20,6	28,3	36,2	6,4	6,6	8,0	9,7	12,8	16,2
Motor power input **(E)**	W	4,7	5,4	7,2	9,9	16,4	25,4	5,3	6,1	8,2	11,4	19,0	29,5
Sound power (Lw)) **(E)**	dB(A)	33	37	41	45	51	55	34	38	42	46	51	55
Sound pressure (Lp) [1]	dB(A)	24	28	32	36	42	46	25	29	33	37	42	46

(E) Eurovent certified performance
(1) The sound pressure levels are 9 dB (A) lower than the sound power levels, apply to the reverberant field of a 100 m³ room and a reverberation time of 0.5 sec

On board controls

CB-Touch EASY	Automatic speed touch EASY control with electronic thermostat and seasonal/ventilation mode selection (to be used with UP-Touch EASY power unit only)
CB-Touch	Automatic speed on board touch control with WiFi/BLE connectivity with electronic thermostat and ventilation/summer/winter switch (to be used with UP-Touch power unit only)
UP-Touch EASY	UP-Touch power unit kit supplied with separate packaging, for CB-Touch EASY on board control
UP-Touch	UP-Touch power unit supplied with separate packaging, for CB-Touch on board control

Wall controls

WM-AU	Automatic speed wall control with electronic thermostat and summer/winter switch (to be used with UP-Touch power unit only) [1]
T-MB2	Wall control with LCD color display and WiFi (to be used with UP-Touch power unit or MB board only) [1]
UP-Touch	UP-Touch power unit supplied with separate packaging, for WM-AU and T-MB2 wall controls
WM-503-AC-EC	Automatic speed control with electronic thermostat to be mounted in the 503 box (to be used with UP-503-AC-EC only)
UP-503-AC-EC	Power unit UP-503 not fitted on the unit, for WM-503-AC-EC remote control (to be used with Kit 503-KNX only)

Controls for MB board or UP-Touch power unit [1] [2]

MB-CF-M	MB electronic board fitted on the unit
MB-CF-S	MB electronic board supplied with separate packaging
T-MB2	Wall control with LCD color display and WiFi (to be used with UP-Touch power unit or MB board only) [1]
PSM-DI	PSM-DI multifunction control panel (to be used with UP-Touch power unit or MB board only) [1]
T-DI	T-DI touch screen multifunction control panel (to be used with MB board only)
SabWeb	Web gateway for Sabiana Cloud (to be used with MB board only)

Management system for a network of fan coils with MB electronic board	
Sabianet	Hardware/software supervisory system (to be used with UP-Touch power unit or MB board only) [1]
Router-S	Router for Sabianet (default) or for BMS systems not provided by Sabiana
SIOS	Relay output board

[1] Not to be used with UP-Touch EASY power unit
[2] To the UP-Touch power unit max. 15 units can be connected

Controls for KNX systems

WM-KNX	Wall control with electronic thermostat and summer/winter switch (to be used with UP-KNX and PL mounting plate only)
UP-KNX	UP-KNX power unit supplied with separate packaging (to be used with Kit 503-KNX only)
PL-503-B	Mounting plate for wall rectangular box
PL-QUA-B	Mounting plate for wall round or square box

NOTE: for more detailed information about Controls and for the complete list of the main Accessories, see the dedicated pages.

Carisma Whisper CFF-ECM-OW

One-way Cassette Fan coil unit

(*)

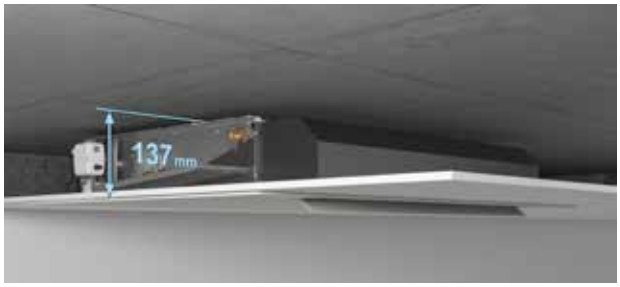
This range includes 4 sizes (from 75 to 575 m³/h) with a 2 row coil.

The Carisma Whisper CFF-ECM-OW fan coil unit combines a reduced dimension with a modern aesthetic, while maintaining great performances in terms of sound and consumption.

Its overall reduced height and the limited weight allow an easy installation into the false ceilings with limited height, allowing:

- lower installation costs
- rooms with greater living height
- buildings with several floors at the same living height

Its wide motorized flap allows a wide air distribution inside the room.



The Carisma CFF-ECM-OW range is equipped with synchronous inverter driven BLAC brushless and sensorless electronic motor with permanent magnets is controlled by an Inverter board designed and developed in Italy.

The air flow can be varied continuously with a 1-10 V signal.

The extreme efficiency, also at a low speed, makes possible a great reduction in electric consumption with absorption values, under normal operating conditions, that are no greater than 5 Watt.

The excellent values in terms of sound levels have been maintained in all working conditions, without any resonance phenomenon at any frequency.

The **CFF-ECM-OW** version includes the infra-red remote control, that allows the management of one single unit.

All the CFF-ECM-OW units offer moreover the possibility of management via **"Sabiana WiFi"** and **"Sabiana BLE"** APP.

This makes this fan coil unit the ideal solution for the air-conditioning of all residential ambients.

Diffuser: it is made of galvanised steel and painted in colour RAL 9003 (white); it is supplied with separated code.

Air supply louver: the air supply louver, of adjustable and motorized type, is of metal painted in colour RAL 9003 (white).

Inner casing: made of 1 mm galvanized steel, a rear panel and two lateral sides insulated with 3 mm polyolefin (PO) foam (B-s2-d0 EN 13501-1).

Filter: polypropylene cellular fabric regenerating filter.

Fan assembly: made of plastic tangential fan with anti-vibration fins. The fan hub, dynamycally and statically balanced, is directly secured onto the motor shaft.

Electronic board and remote control: the unit is equipped with electronic control board and with infra-red remote control. The electronic board fitted on the unit is equipped with a microprocessor with BLE / WiFi feature, that allows to control at distance or remotely all the units installed.
An accessory kit for the communication via ModBus protocol is available.

Electronic motor with three phase permanent magnet brushless electronic motor that is controlled with reconstructed current according to a BLAC sinusoidal wave.
The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a switching system, it generates a three-phase frequency modulated, wave form power supply.
The electric power supply required for the machine is therefore single-phase with voltage of 230 V and frequency of 50 - 60 Hz.

Coil: It is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process. The coil has two O 1/2 inch BSP internal connections. The coil has O 1/8" inch BSP air vent and drain. The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.
The position of the hydraulic connections is always on the left side (see the following technical drawings).

Condensate collection tray: made of AISI 304 steel and fixed to the internal structure.

Condensate drain pump: condensate drain pump directly managed from the electronic board that is combined with a floating system for the condensate level control and alarm. The pump is included.

Valves (accessory) the following valve kits are available for all sizes:
• 2 way
• 3 way
The valves can be ordered separately and easily installed on the basic units without valves or they can be directly fitted in the factory.

(*)

Sabiana WiFi, il clima amico sempre con te

Sabiana WiFi is the App for the control at a distance of your Sabiana system of-climatisation. Free and easy to use, it needs only a wireless network and a smart-phone with internet connection.
Using the "Cloud" it allows to manage, program and supervise the status of Your air conditioners wherever You are.

(*)

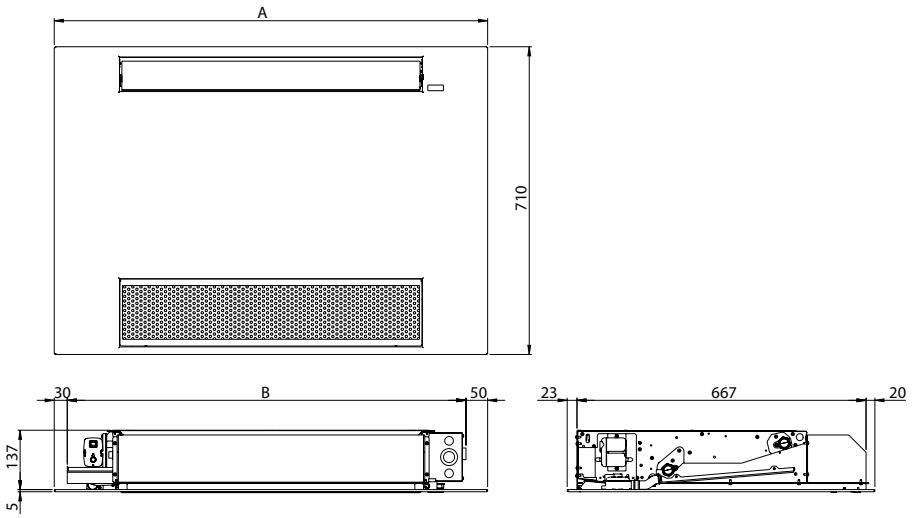
Sabiana BLE, il clima a portata di mano

Sabiana BLE is the new App for Android™ and iOS systems to set, manage and control Your climatisation system via Bluetooth Low Energy (BLE) transmission. Free and easy to configure and use, it needs only a smartphone with a Bluetooth connection (version 4.0 or later versions).

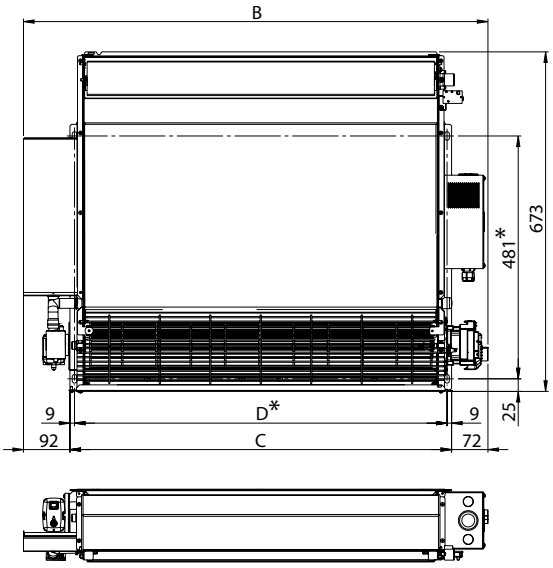
(*) See availabilty function on controls.

DIMENSIONS

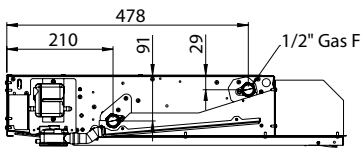
CFF-ECM-OW (internal unit + diffuser)



Internal CFF-ECM-OW unit

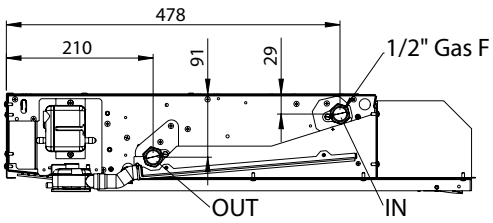


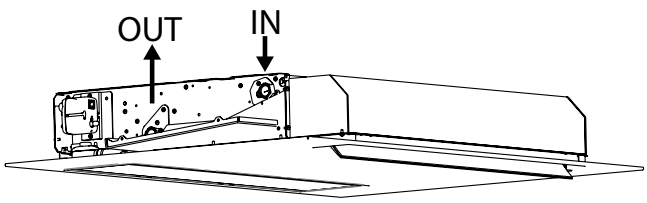
* = centre distance for the holes for hanging



Model		10	20	30	40
A	mm	600	800	1000	1200
B	mm	520	720	920	1120
C	mm	356	556	756	956
D	mm	338	538	738	938
E	mm	570	770	970	1170

Coil connections





⚠ **The connections are always on the left (as shown in the picture)**

Weight (kg)

The table of the weight is related to the standard versions with casing in the basic configuration without control and without valves; the weight can change for those units completed with control and/or valve.

CFF-ECM-OW unit

Model	Weight with packaging				Weight without packaging			
	10	20	30	40	10	20	30	40
	12,9	17,2	21,2	25,6	11,3	15,2	18,9	23,1

Diffuser

Model	Weight with packaging				Weight without packaging			
	10	20	30	40	10	20	30	40
	4,6	6,1	7,5	8,8	3,5	4,7	5,9	7,1

Water content (litres)

Model	10	20	30	40
Water content	0,4	0,7	1,1	1,4

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The following standard rating conditions are used:

COOLING
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

HEATING
Entering air temperature: +20 °C
Water temperature: +45 °C E.W.T. +40 °C L.W.T.

Model		CFF-ECM-OW 10						CFF-ECM-OW 20						CFF-ECM-OW 30					
Inverter power		1	2	3,5	5	7,5	10	1	2	3,5	5	7,5	10	1	2	3,5	5	7,5	10
			MIN		**MED**		**MAX**		**MIN**		**MED**		**MAX**		**MIN**		**MED**		**MAX**
Eurovent certified performances		-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**
Air flow	m^3/h	75	90	110	130	170	205	125	145	175	205	255	305	190	225	270	315	395	470
Cooling total emission **(E)**	kW	0,40	0,48	0,58	0,66	0,80	0,92	0,67	0,83	1,01	1,15	1,39	1,62	0,92	1,08	1,56	1,91	2,30	2,61
Cooling sensible emission **(E)**	kW	0,30	0,36	0,44	0,52	0,64	0,75	0,50	0,62	0,76	0,88	1,08	1,28	0,67	0,79	1,15	1,41	1,72	1,99
Heating emission **(E)**	kW	0,55	0,60	0,68	0,78	0,96	1,10	0,97	1,01	1,16	1,32	1,57	1,81	1,52	1,62	1,85	2,10	2,53	2,90
Dp Cooling **(E)**	kPa	4,9	6,0	7,5	9,1	12,0	14,7	3,1	3,6	4,3	4,9	6,1	7,4	4,5	5,4	8,6	11,5	15,2	18,6
Dp Heating **(E)**	kPa	6,1	6,7	8,0	9,6	13,0	16,2	3,7	3,9	4,4	5,0	6,1	7,3	7,1	7,7	9,2	11,0	14,6	18,2
Fan **(E)**	W	3,2	3,5	4,2	5,2	7,4	10,3	3,7	4,0	4,9	6,3	9,5	14,0	4,1	4,8	6,3	8,6	14,1	21,6
Sound power (Lw) (E)	dB(A)	31	33	36	40	45	50	30	33	38	42	47	52	32	34	39	43	47	53
Sound pressure (Lp) (1)[1]	dB(A)	22	24	27	31	36	41	21	24	29	33	38	43	23	25	30	34	38	44

Model		CFF-ECM-OW 40					
Inverter power		1	2	3,5	5	7,5	10
			MIN		**MED**		**MAX**
Eurovent certified performances		-	**(E)**	-	**(E)**	-	**(E)**
Air flow	m^3/h	220	260	320	380	480	575
Cooling total emission **(E)**	kW	1,14	1,45	2,06	2,50	2,97	3,36
Cooling sensible emission **(E)**	kW	0,82	1,05	1,48	1,80	2,17	2,49
Heating emission **(E)**	kW	1,79	1,91	2,23	2,58	3,13	3,62
Dp Cooling **(E)**	kPa	7,3	10,2	17,3	23,7	31,7	39,1
Dp Heating **(E)**	kPa	11,7	12,9	16,3	20,6	28,3	36,2
Fan **(E)**	W	4,7	5,4	7,2	9,9	16,4	25,4
Sound power (Lw) (E)	dB(A)	33	37	41	45	51	55
Sound pressure (Lp) (1)	dB(A)	24	28	32	36	42	46

(E) Eurovent certified performance
(1) The sound pressure levels are 9 dB (A) lower than the sound power levels, apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

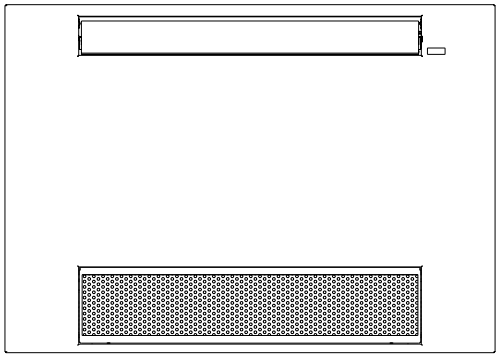
Controls

KC-F	Connectivity kit "High Wall Connectivity Kit" (auxiliary board for Modbus connection + auxiliary board for T-MB2 connection)
T-MB2	Wall control with LCD color display and WiFi
PSM-DI	PSM-DI multifunction control panel (to be used with connectivity kit only)
T-DI	T-DI touch screen multifunction control panel (to be used with connectivity kit only)
SabWeb	Web gateway for Sabiana Cloud (to be used with connectivity kit only)

Management system for a network of fan coils with MB electronic board	
Sabianet	Hardware/software supervisory system
Router-S	Router for Sabianet (default) or for BMS systems not provided by Sabiana
SIOS	Relay output board

Air intake and distribution diffuser (mandatory)

Colour RAL 9003



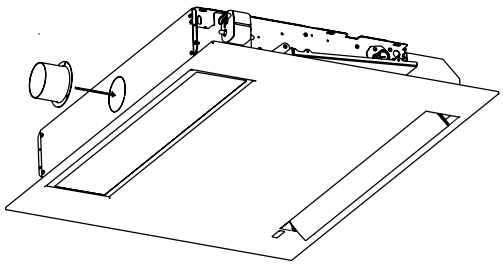
ACCESSORIES

2 way valve

3 way valve

FRC fresh air connection

Not fitted.



Carisma Whisper CFF

Residential fan coil unit

This range includes 4 sizes (from 40 to 400 m^3/h) and 2 versions (standard with casing and for concealed installation), each one equipped with a 2 row coil.

The CFF range is perfect to meet all air-conditioning requirements of residential and work environments like offices, shops, restaurants and hotel rooms.

The Carisma Whisper CFF fan coil unit combines a reduced dimension with a modern aesthetic, while maintaining great performances in terms of sound and consumption.

Carisma Whisper CFF is available in the MV version for wall installation that combines a reduced dimension, until 126 mm depth only, with a modern aesthetic that perfectly suits with any kind of furnishing, while maintaining great performances in terms of sound and consumption.

The excellent values in terms of sound levels have been maintained in all working conditions, without any resonance phenomenon at any frequency.

Outer casing: made of galvanized steel and with plastic outer casing. The air diffuser, that is placed over the top of the unit, is of adjustable type. White RAL 9003.

Inner casing: made of 1 mm galvanized steel, a rear panel and two lateral sides insulated with 3 mm polyolefin (PO) foam (B-s2-d0 EN 13501-1).

Filter: polypropylene cellular fabric regenerating filter. The filter frame, made of synthetic material, is inserted into special plastic sliding guides fastened to the internal structure for easy insertion and removal of the filter.

Fan assembly: made of plastic tangential fan with anti-vibration fins. The fan hub, dynamycally and statically balanced, is directly secured onto the motor shaft.

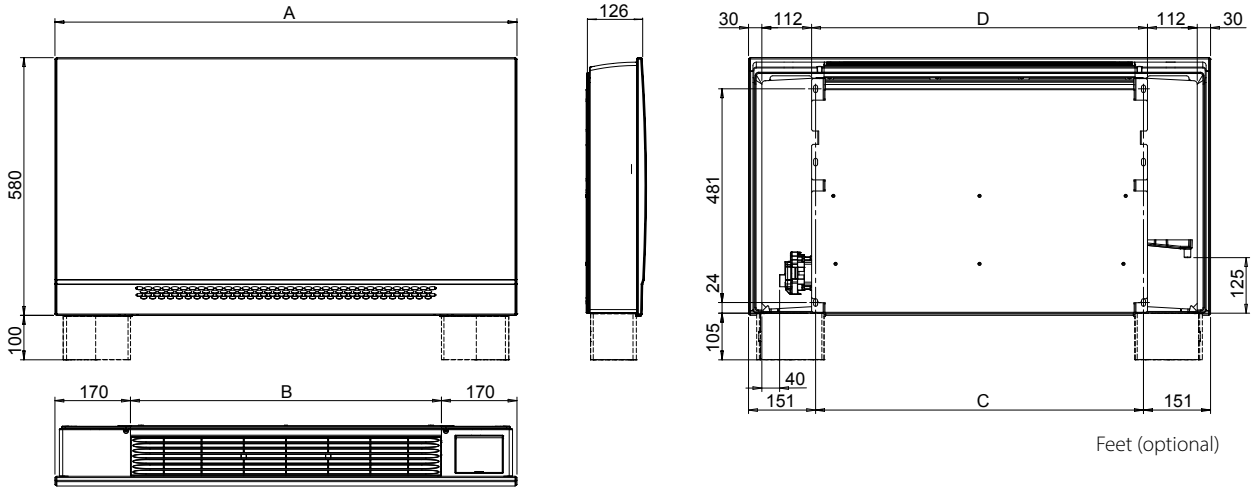
The **motor** is for single phase supply and has 6 speeds, 3 of which are connected. It is fitted on anti-vibration self-lubricating mountings and with capacitor permanently fitted, internal thermal protection with automatic reset. Protection IP 20, class B. The electric power supply required for the machine is therefore single-phase with voltage of 230 V and frequency of 50 Hz.

Coil: It is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process. The coil has two Ø 1/2 inch BSP internal connections. The coil has Ø 1/8" inch BSP air vent and drain. The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.
The standard hydraulic connections are only on the left side facing the unit. It is not possible to connect hydraulically on the right side.

Valves: the versions without valves or with mounted valves are available for all sizes.
The available valves are 2 or 3 ways. The valves can be ordered separately and easily installed on the basic units without valves.

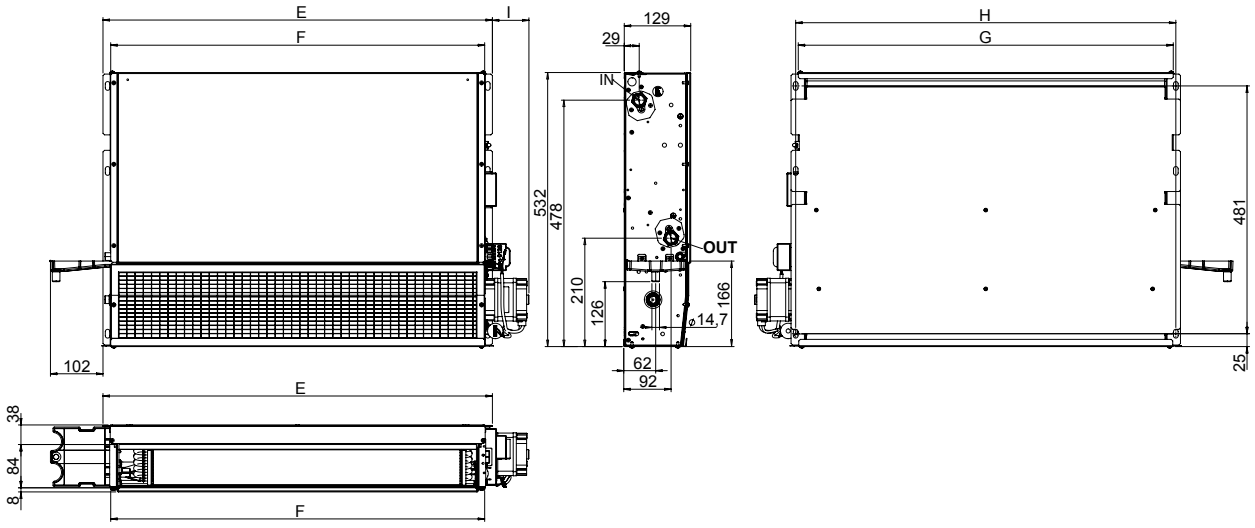
Condensate collection tray: made of plastic (ABS UL94 HB) and fixed to the internal structure. The outside diameter of the condensate discharge pipe is Ø 15 mm.

Standard version with casing - MV



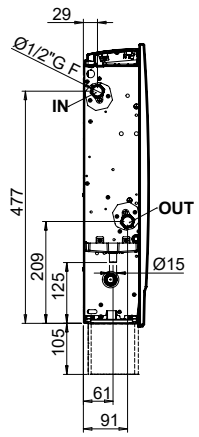
Feet (optional)

Version for concealed installation - IV

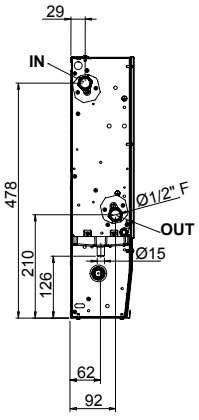


Coil connections

MV version



IV version



Dimensions (mm)

MV version

Model	10	20	30	40
A	640	840	1040	1240
B	300	500	700	900
C	338	538	738	938
D	356	556	756	956

IV version

Model	10	20	30	40
E	356	556	756	956
F	326	526	726	926
G	328	528	728	928
H	338	538	738	938
I	61	71	71	71

Weight (kg)

	Weight with packaging				Weight without packaging			
Model	10	20	30	40	10	20	30	40
MV version	12,5	16,0	19,5	22,5	11,0	14,5	17,5	21,0
IV version	10,1	13,6	17,3	20,9	8,5	11,7	15,1	18,5

Water content (litres)

Model	10	20	30	40
	0,4	0,7	1,1	1,4

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The following standard rating conditions are used:

COOLING
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

HEATING
Temperatura aria: +20 °C
Temperatura acqua: +45 °C E.W.T. +40 °C L..W.T.

Model		CFF 10						CFF 20						CFF 30					
Inverter power		1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
			MIN		**MED**		**MAX**		**MIN**		**MED**		**MAX**		**MIN**		**MED**		**MAX**
Eurovent certified performances		-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**	-	**(E)**
Air flow	m^3/h	58	75	102	126	135	165	110	151	170	210	225	280	150	180	200	290	320	378
Cooling total emission **(E)**	kW	0,33	0,41	0,54	0,62	0,70	0,80	0,63	0,85	1,00	1,15	1,25	1,45	0,82	1,14	1,30	1,74	1,92	2,18
Cooling sensible emission **(E)**	kW	0,24	0,30	0,41	0,48	0,55	0,64	0,46	0,63	0,75	0,88	0,96	1,14	0,59	0,82	0,93	1,27	1,41	1,62
Heating emission **(E)**	kW	0,45	0,51	0,64	0,76	0,80	0,94	0,87	1,05	1,13	1,34	1,42	1,69	1,24	1,34	1,43	1,96	2,13	2,44
Dp Cooling **(E)**	kPa	2,5	3,7	6,0	7,8	9,7	12,6	1,7	2,8	3,7	4,9	5,7	7,5	2,6	4,7	5,9	10,0	12,0	15,3
Dp Heating **(E)**	kPa	3,5	4,5	6,7	9,2	10,1	13,3	2,2	3,1	3,5	4,8	5,4	7,3	4,4	5,0	5,6	10,0	11,5	14,7
Motor power input **(E)**	W	8,0	10,0	12,0	15,0	17,0	31,0	9,0	12,0	13,0	18,0	20,0	34,0	11,0	14,0	15,0	20,0	22,0	39,0
Sound power (Lw)) **(E)**	dB(A)	29	35	38	43	44	49	30	36	38	44	46	50	32	37	40	45	48	52
Sound pressure (Lp) (1)	dB(A)	20	26	29	34	35	40	21	27	29	35	37	41	23	28	31	36	39	43

Model		CFF 40					
Inverter power		1	2	3	4	5	6
			MIN		**MED**		**MAX**
Eurovent certified performances		-	**(E)**	-	**(E)**	-	**(E)**
Air flow	m^3/h	180	230	265	325	375	450
Cooling total emission **(E)**	kW	1,14	1,51	1,75	2,11	2,35	2,79
Cooling sensible emission **(E)**	kW	0,80	1,07	1,24	1,51	1,69	2,02
Heating emission **(E)**	kW	1,51	1,72	1,90	2,26	2,55	2,96
Dp Cooling **(E)**	kPa	5,7	9,6	12,5	17,5	21,3	29,2
Dp Heating **(E)**	kPa	7,7	9,7	11,6	15,9	19,8	25,9
Motor power input **(E)**	W	12,0	14,0	16,0	22,0	25,0	44,0
Sound power (Lw)) **(E)**	dB(A)	28	34	35	42	44	50
Sound pressure (Lp) (1)	dB(A)	19	25	26	33	35	41

(E) Eurovent certified performance (MIN-MED-MAX speed)
(1) The sound pressure levels are 9 dB (A) lower than the sound power levels, apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec

CB-T-CFF control fitted on board

Wall controls

MV and IV versions	
WM-3V	3 speed control
WM-T	3 speed control with electronic thermostat and manual summer/winter switch

Controls for MB board

MB-CF-M	MB electronic board fitted on the unit
MB-CF-S	MB electronic board supplied with separate packaging
T-MB2	Wall control with LCD color display and WiFi (to be used with MB board only)
PSM-DI	PSM-DI multifunction control panel (to be used with MB board only)
T-DI	T-DI touch screen multifunction control panel (to be used with MB board only)
SabWeb	Web gateway for Sabiana Cloud (to be used with MB board only)

Management system for a network of fan coils with MB electronic board	
Sabianet	Hardware/software supervisory system (to be used with MB board only)
Router-S	Router for Sabianet (default) or for BMS systems not provided by Sabiana
SIOS	Relay output board

Accessories

Kit Breeze accessory
accessory available also for CFF-IV (see CFF-ECM dedicated page)

NOTE: for more detailed information about Controls and for the complete list of the main Accessories, see the dedicated pages.

Carisma CRC-MVI

Fan Coil Unit with Centrifugal Fan with Asynchronous Motor

Range includes **5 air flow rates** (from 145 to 925 m^3/h) each equipped with 4 row coil and with the possibility to add a 1 row coil for 4 pipe systems.

It includes some models from the CRC series but with a **particularly sturdy casing**, suited for installation in public places where there is a high risk of damage and improper use of the fan coil.

TECHNICAL CHARACTERISTICS

Casing: in galvanised steel plate, pre-painted in RAL 9002 (light grey), thickness 1.2 mm with built-in safety closures and keys for opening the front panel.

Output grills: in grey-finished extruded aluminium.

Inner casing: made from 1 mm galvanized steel insulated with 3 mm polyolefin (PO) foam B-s2-d0 EN 13501-1.

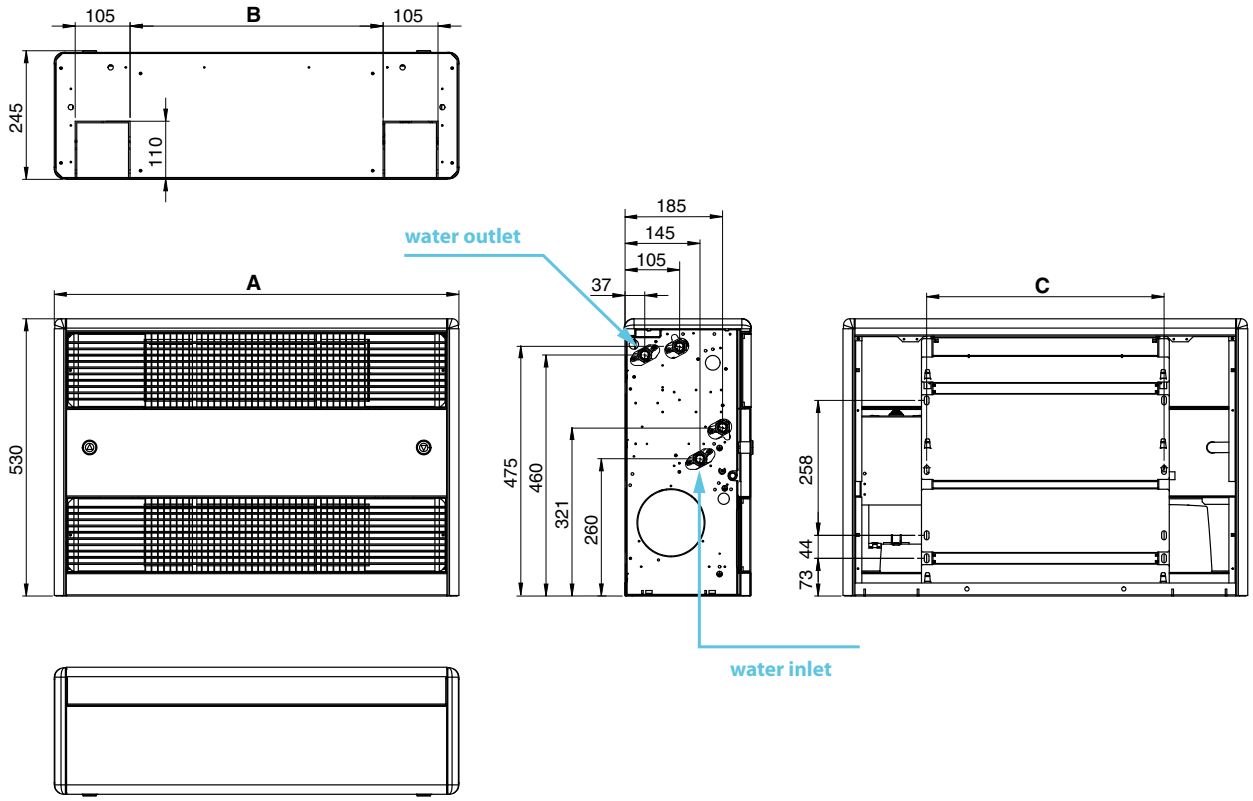
Filter: polypropylene cellular fabric regenerating filter.

Fan assembly: the fans have aluminium or plastic blades directly keyed on the motor with double aspiration and they are dynamically and statically balanced during manufacture in order to have an extremely quiet operation.

Electric motor: the motor is wired for single phase and has six speeds, three of which are connected, with capacitor. The motor is fitted on sealed for life bearings and is secured on anti-vibration and self-lubricating mountings.
Internal thermal protection with automatic reset, protection IP 20, class B.

Coil: it is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process. The coil has two 1/2inch BSP internal connections and 1/8 inch BSP air vent and drain. The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.

Condensate collection tray: made from plastic fitted on the inner casing; the tray is insulated with 3 mm polyolefin (PO) foam B-s2-d0 EN 13501-1.
The outside diameter of the condensate discharge pipe is 15 mm.



Dimension (mm)

Model	CRC 24 MVI	CRC 44 MVI	CRC 54 MVI	CRC 64 MVI	CRC 74 MVI
A	775	990	1.205	1.205	1.420
B	487	702	917	917	1132
C	454	669	884	884	1099

Weight (kg)

Model		Weight with packaging					Weight without packaging				
		CRC 24 MVI	CRC 44 MVI	CRC 54 MVI	CRC 64 MVI	CRC 74 MVI	CRC 24 MVI	CRC 44 MVI	CRC 54 MVI	CRC 64 MVI	CRC 74 MVI
ROWS	**4**	25,0	32,5	39,1	40,0	46,6	23,0	29,5	36,1	37,0	42,6
	4+1	25,8	33,7	40,6	41,5	48,4	23,8	30,7	37,6	38,5	44,4

Water content (litres)

Model		CRC 24 MVI	CRC 44 MVI	CRC 54 MVI	CRC 64 MVI	CRC 74 MVI
ROWS	**4**	0,8	1,3	1,7	2,2	2,4
	4+1	0,2	0,3	0,4	0,5	0,5

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Units with 4 row coil

2 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27°C d.b. +19°C w.b.
Water temperature: +7°C E.W.T. +12°C L.W.T.

HEATING (winter mode)
Entering air temperature: +20°C
Water temperature: +45°C E.W.T. +40°C L.W.T.

Model			CRC 24 MVI						CRC 44 MVI						CRC 54 MVI					
Speed			1 (E)	2	3 (E)	4	5 (E)	6	1	2 (E)	3 (E)	4	5 (E)	6	1	2 (E)	3	4 (E)	5 (E)	6
			MIN		MED		MAX			MIN	MED		MAX			MIN		MED	MAX	
Air Flow		m^3/h	**145**	170	**220**	250	**295**	340	185	**265**	**335**	400	**485**	570	250	**315**	420	**495**	**545**	650
Cooling total emission (E)		kW	**1,00**	1,11	**1,41**	1,56	**1,78**	2,00	1,31	**1,81**	**2,25**	2,62	**3,08**	3,50	1,77	**2,17**	2,79	**3,21**	**3,49**	4,03
Cooling sensible emission (E)		kW	**0,73**	0,82	**1,05**	1,17	**1,35**	1,53	0,94	**1,32**	**1,65**	1,93	**2,30**	2,63	1,28	**1,58**	2,04	**2,36**	**2,58**	3,01
Heating (E)		kW	**0,99**	1,11	**1,43**	1,60	**1,83**	2,08	1,28	**1,80**	**2,27**	2,64	**3,14**	3,62	1,71	**2,10**	2,74	**3,16**	**3,46**	4,01
Heating - Water 70-60 °C		kW	**1,98**	2,24	**2,88**	3,22	**3,69**	4,19	2,57	**3,62**	**4,56**	5,32	**6,33**	7,30	3,44	**4,23**	5,51	**6,37**	**6,97**	8,07
Dp Cooling (E)		kPa	**4,9**	6,1	**9,1**	11,0	**13,9**	17,2	3,4	**6,1**	**9,0**	11,7	**15,5**	19,6	7,3	**10,4**	16,3	**20,8**	**24,2**	31,3
Dp Heating (E)		kPa	**4,0**	4,9	**7,6**	9,3	**11,8**	14,8	2,6	**5,0**	**7,2**	9,4	**12,8**	16,4	5,6	**8,1**	12,9	**16,6**	**19,5**	25,2
Fan (E)		W	**14**	16	**22**	26	**32**	40	14	**21**	**28**	34	**44**	57	18	**22**	32	**39**	**46**	61
Sound power (E)		dB(A)	**30**	33	**40**	43	**47**	51	27	**33**	**39**	43	**47**	52	26	**31**	37	**41**	**43**	48
Sound pressure (*)		dB(A)	**21**	24	**31**	34	**38**	42	18	**24**	**30**	34	**38**	43	17	**22**	28	**32**	**34**	39
1 row heating additional coil (Water 70/60 °C)	Heating (E)	kW	**0,94**	1,04	**1,25**	1,36	**1,52**	1,68	1,34	**1,73**	**2,06**	2,32	**2,65**	2,88	1,77	**2,07**	2,53	**2,83**	**3,03**	3,42
	Dp Heat. (E)	kPa	**1,7**	2,0	**2,8**	3,3	**4,0**	4,8	3,9	**6,0**	**8,2**	10,1	**12,8**	14,8	1,2	**1,6**	2,3	**2,8**	**3,2**	3,9

Model			CRC 64 MVI						CRC 74 MVI					
Speed			1 (E)	2	3 (E)	4	5 (E)	6	1	2 (E)	3	4 (E)	5	6 (E)
			MIN		MED		MAX			MIN		MED		MAX
Air Flow		m^3/h	**415**	505	**590**	680	**760**	830	445	**535**	630	**735**	840	**925**
Cooling total emission (E)		kW	**2,79**	3,34	**3,81**	4,31	**4,71**	5,04	2,99	**3,51**	4,01	**4,56**	5,08	**5,48**
Cooling sensible emission (E)		kW	**2,03**	2,45	**2,81**	3,20	**3,52**	3,79	2,18	**2,57**	2,96	**3,39**	3,80	**4,13**
Heating (E)		kW	**2,82**	3,39	**3,90**	4,46	**4,92**	5,31	2,95	**3,49**	4,03	**4,62**	5,15	**5,59**
Heating - Water 70-60 °C		kW	**5,66**	6,81	**7,85**	8,98	**9,90**	10,68	5,93	**7,02**	8,12	**9,30**	10,38	**11,26**
Dp Cooling (E)		kPa	**14,4**	19,7	**24,8**	30,9	**36,2**	40,9	9,5	**12,5**	15,9	**20,0**	24,2	**27,7**
Dp Heating (E)		kPa	**11,9**	16,5	**21,1**	26,8	**31,8**	36,3	7,5	**10,1**	13,1	**16,6**	20,1	**23,2**
Fan (E)		W	**37**	46	**55**	67	**78**	88	44	**54**	66	**79**	92	**103**
Sound power (E)		dB(A)	**37**	42	**46**	49	**52**	54	38	**42**	47	**51**	54	**56**
Sound pressure (*)		dB(A)	**28**	33	**37**	40	**43**	45	29	**33**	38	**42**	45	**47**
1 row heating additional coil (Water 70/60 °C)	Heating (E)	kW	**2,50**	2,87	**3,19**	3,54	**3,81**	4,04	2,89	**3,29**	3,68	**4,09**	4,49	**4,79**
	Dp Heat. (E)	kPa	**3,2**	4,1	**4,9**	5,8	**6,7**	7,4	3,4	**4,3**	5,2	**6,3**	7,4	**8,3**

(E) = Eurovent certified performance. **MIN-MED-MAX** = Standard connected speeds.
(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

Accessories

PLH	Plinth

Wall electronic controls

Can be connected only to wall controls for Fan Coil Units with asynchronous motors (WM-AU, T-MB2, WM-503-AC-EC and infra-red remote control excluded)

NOTE: for more information about Controls and for full list of main Accessories, please see the dedicated pages.

Carisma CRSL

High Pressure Fan Coil Unit with Asynchronous Motor

Range includes **7 air flow rates** (from 340 to 2100 m^3/h) each equipped with 3 or 4 row coil and with the possibility to add a 1 or 2 row coil for 4 pipe systems.
It is the perfect range to meet all air-conditioning requirements of work environments like offices, shops, restaurants and hotel rooms featuring ducted installations with available pressure **up to 80 Pa**.

All range is compliant with the **(EU) Regulation No. 327/2011** which requires **very low electric consumption ratings** in relation to performances provided.

TECHNICAL CHARACTERISTICS

Casing: made from 1 mm galvanized steel insulated with 3 mm polyolefin (PO) foam B-s2-d0 EN 13501-1.

Filter: polypropylene cellular fabric regenerating filter. The filter frame of galvanized steel is inserted into special plastic sliding guides fastened to the internal structure for easy insertion and removal of the filter.

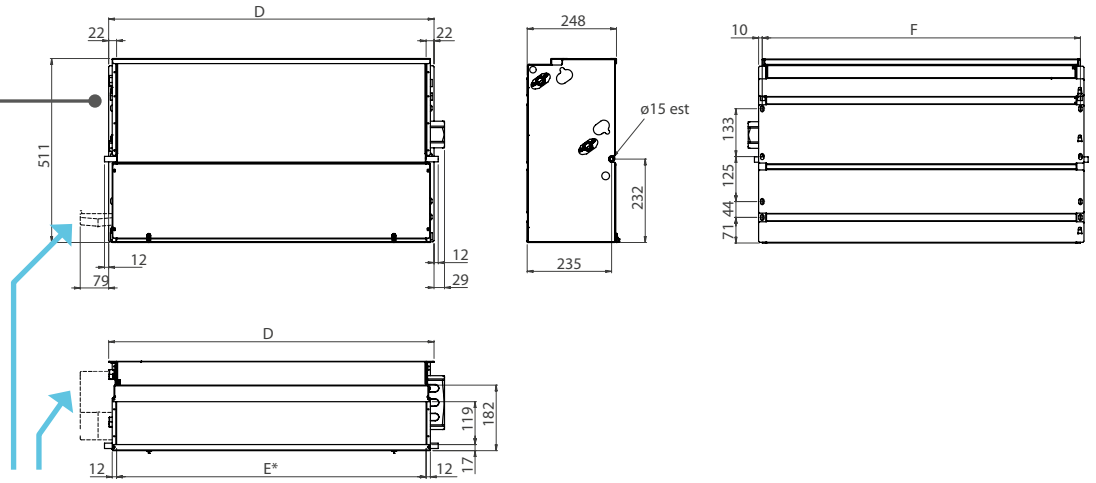
Fan assembly: the fans have aluminium or plastic blades directly keyed on the motor with double aspiration and they are dynamically and statically balanced during manufacture in order to have an extremely quiet operation.

Electric motor: the motor is wired for single phase and has five speeds, with capacitor.
The motor is fitted on sealed for life bearings and is secured on anti-vibration and self-lubricating mountings.
Internal thermal protection with automatic reset, protection IP 20, class B.

Coil: it is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process.
The coil has two 1/2inch BSP internal connections and 1/8 inch BSP air vent and drain.
The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.
The connections are on the left hand side looking from the air outlet of the unit (see picture).
On request or on site the connections can be moved to the other side.

Condensate collection tray: **"L"**-shaped, fitted on the inner casing, for size 1÷4 made of plastic and for sizes 5÷7, made in painted steel; the tray is insulated with 3 mm polyolefin (PO) foam B-s2-d0 EN 13501-1.
The outside diameter of the condensate discharge pipe is 15 mm.

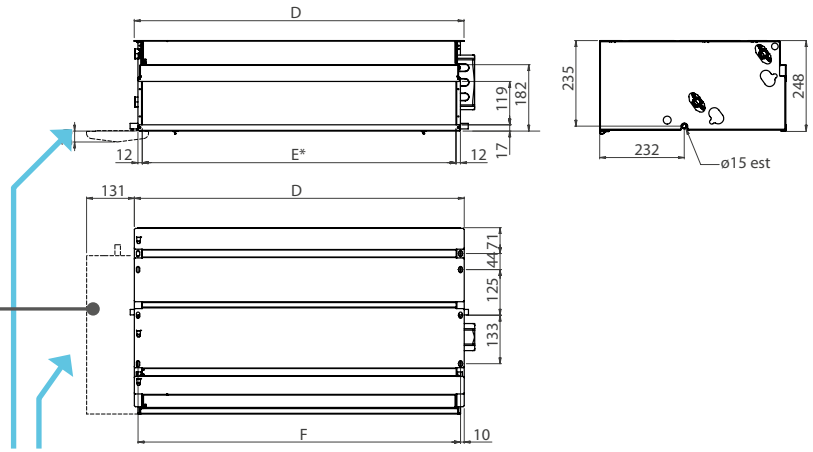
Vertical Installation



Auxiliary condensate tray (optional)

* Supply frame dimension = E x 119 mm

Horizontal Installation



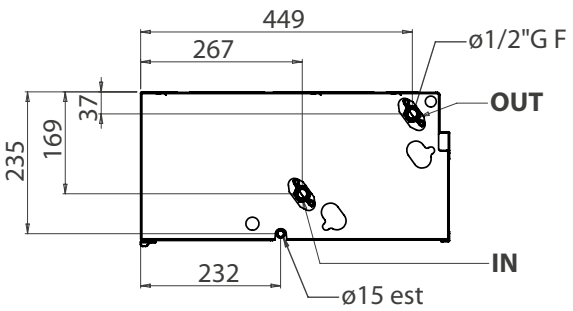
Auxiliary condensate tray (optional)

Coil connections on the left

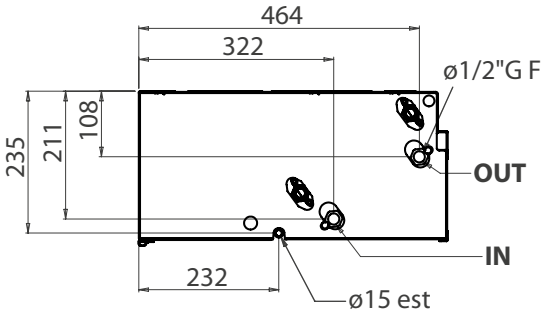
* Supply frame dimension = E x 119 mm

Coil connections

3 or 4 row coils



Heating additional coil
(1 or 2 rows)



Dimension (mm)

Model	1	2	3	4	5	6	7
D	689	904	1119	1119	1334	1549	1549
E	645	860	1075	1075	1290	1505	1505
F	669	884	1099	1099	1314	1529	1529

Weight (kg)

	Weight with packaging							Weight without packaging						
Model	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
3	19,5	26,4	29,5	30,9	42,4	52,2	52,4	18,5	25,4	26,5	27,9	38,4	47,2	47,4
3+1	20,7	27,9	31,3	32,7	44,3	54,5	54,7	19,7	26,9	28,3	29,7	40,3	49,5	49,7
3+2	21,4	28,8	32,4	33,8	-	-	-	20,4	27,8	29,4	30,8	-	-	-
4	20,5	27,7	30,9	32,0	43,8	53,9	54,1	19,5	26,7	27,9	29,0	39,8	48,9	49,1
4+1	21,7	29,2	32,7	33,8	45,7	56,2	56,4	20,7	28,2	29,7	30,8	41,7	51,2	51,4

Water content (litres)

	1	2	3	4	5	6	7
3	0,9	1,6	1,9	1,9	2,6	3,2	3,2
4	1,3	2,2	2,8	2,8	3,4	4,2	4,2
+1	0,3	0,5	0,6	0,6	0,8	0,9	0,9
+2	0,6	1,0	1,2	1,2	-	-	-

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Units with 3 row coil

2 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

HEATING (winter mode)
Entering air temperature: +20 °C
Water temperature: +45 °C E.W.T. +40 °C L.W.T.

Model		CRSL 13			CRSL 23			CRSL 33			CRSL 43		
Speed		**1**	**4**	**5**	**1**	**4**	**5**	**1**	**4**	**5**	**1**	**4**	**5**
Air flow **(E)**	m^3/h	205	290	315	395	575	625	380	720	790	600	850	980
Available pressure **(E)**	Pa	25	50	58	26	50	58	14	50	60	23	50	65
Cooling total emission **(E)**	kW	1,43	1,88	2,00	2,57	3,40	3,60	2,68	4,42	4,72	3,85	4,97	5,47
Cooling sensible emission **(E)**	kW	1,01	1,35	1,44	1,85	2,53	2,70	1,90	3,30	3,55	2,82	3,77	4,22
Heating **(E)**	kW	1,43	1,96	2,11	2,67	3,70	3,98	2,71	4,82	5,22	4,10	5,56	6,27
Dp Cooling **(E)**	kPa	11	17	20	10,6	17,7	19,6	6,3	15,7	17,7	12,2	19,4	23,2
Dp Heating **(E)**	kPa	9	16	18	8,9	16,1	18,3	5,1	14,3	16,6	10,7	18,6	23,0
Fan **(E)**	W	27	45	51	59	87	94	50	96	110	88	122	148
Sound power outlet **(E)**	dB(A)	34	42	43	38	47	49	36	48	51	44	52	55
Sound power inlet + radiated **(E)**	dB(A)	42	50	52	45	55	56	43	56	58	51	59	62
Sound pressure outlet **(*)**	dB(A)	25	33	34	29	38	40	27	39	42	35	43	46
Sound pressure inlet + radiated **(*)**	dB(A)	33	41	43	36	46	47	34	47	49	42	50	53
Plenum code		9069191			9069222			9066368			9066368		

Model		CRSL 53			CRSL 63			CRSL 73		
Speed		**1**	**4**	**5**	**1**	**4**	**5**	**1**	**3**	**4**
Air flow **(E)**	m^3/h	475	810	970	580	1120	1240	905	1270	1425
Available pressure **(E)**	Pa	18	50	70	15	50	60	26	50	63
Cooling total emission **(E)**	kW	3,30	5,04	5,72	3,99	6,62	7,11	5,58	7,11	7,70
Cooling sensible emission **(E)**	kW	2,31	3,64	4,19	2,83	4,94	5,36	4,06	5,37	5,89
Heating **(E)**	kW	3,33	5,36	6,25	3,94	6,96	7,58	5,82	7,73	8,49
Dp Cooling **(E)**	kPa	12,2	26,3	33,1	6,6	16,4	18,7	12,2	18,8	21,7
Dp Heating **(E)**	kPa	9,7	23,0	30,4	5,1	14,2	16,5	10,3	17,1	20,2
Fan **(E)**	W	65	110	140	69	125	145	155	177	186
Sound power outlet **(E)**	dB(A)	37	48	53	38	50	52	46	53	56
Sound power inlet + radiated **(E)**	dB(A)	43	56	60	46	58	60	53	60	63
Sound pressure outlet **(*)**	dB(A)	28	39	44	29	41	43	37	44	47
Sound pressure inlet + radiated **(*)**	dB(A)	34	47	51	37	49	51	44	51	54
Plenum code		9069195			9069196			9069196		

(E) = EUROVENT certified performance.
(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m3 room and a reverberation time of 0.5 sec.

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Units with 4 row coil

2 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

HEATING (winter mode)
Entering air temperature: +20 °C
Water temperature: +45 °C E.W.T. +40 °C L.W.T.

Model		CRSL 14			CRSL 24			CRSL 34			CRSL 44		
Speed		**1**	**4**	**5**	**1**	**4**	**5**	**1**	**4**	**5**	**1**	**4**	**5**
Air flow **(E)**	m^3/h	205	290	315	395	575	625	380	720	790	600	850	980
Available pressure **(E)**	Pa	25	50	58	26	50	58	14	50	60	23	50	65
Cooling total emission **(E)**	kW	1,54	2,07	2,22	2,93	4,01	4,28	2,89	4,99	5,36	4,10	5,36	5,94
Cooling sensible emission **(E)**	kW	1,07	1,46	1,57	2,03	2,84	3,04	2,00	3,55	3,84	2,95	3,97	4,46
Heating **(E)**	kW	1,49	2,07	2,23	2,85	4,02	4,34	2,76	4,99	5,42	4,22	5,77	6,55
Dp Cooling **(E)**	kPa	5,6	9,7	11,0	15,8	27,9	31,3	11,8	31,7	36,1	7,9	12,9	15,6
Dp Heating **(E)**	kPa	5,1	9,2	10,5	12,3	22,8	26,2	8,6	24,9	28,9	6,6	11,5	14,5
Fan **(E)**	W	27	45	51	59	87	94	50	96	110	89	120	146
Sound power outlet **(E)**	dB(A)	34	42	43	38	47	49	36	48	51	44	52	55
Sound power inlet + radiated **(E)**	dB(A)	42	50	52	45	55	56	43	56	58	51	59	62
Sound pressure outlet **(*)**	dB(A)	25	33	34	29	38	40	27	39	42	35	43	46
Sound pressure inlet + radiated **(*)**	dB(A)	33	41	43	36	46	47	34	47	49	42	50	53
Plenum code		9069191			9069222			9066368			9066368		

Model		CRSL 54			CRSL 64			CRSL 74		
Speed		**1**	**4**	**5**	**1**	**4**	**5**	**1**	**3**	**4**
Air flow **(E)**	m^3/h	475	810	970	580	1120	1240	905	1270	1425
Available pressure **(E)**	Pa	18	50	70	15	50	60	26	50	63
Cooling total emission **(E)**	kW	3,48	5,44	6,22	4,23	7,25	7,82	6,10	7,92	8,62
Cooling sensible emission **(E)**	kW	2,43	3,89	4,52	2,96	5,26	5,72	4,34	5,80	6,38
Heating **(E)**	kW	3,41	5,57	6,54	4,17	7,63	8,34	6,30	8,52	9,42
Dp Cooling **(E)**	kPa	6,3	14,2	18,1	5,1	13,6	15,6	10,1	16,1	18,7
Dp Heating **(E)**	kPa	5,2	12,5	16,7	4,3	12,7	15,0	9,0	15,6	18,6
Fan **(E)**	W	65	110	140	66	125	145	155	177	186
Sound power outlet **(E)**	dB(A)	37	48	53	38	50	52	46	53	56
Sound power inlet + radiated **(E)**	dB(A)	43	56	60	46	58	60	53	60	63
Sound pressure outlet **(*)**	dB(A)	28	39	44	29	41	43	37	44	47
Sound pressure inlet + radiated **(*)**	dB(A)	34	47	51	37	49	51	44	51	54
Plenum code		9069195			9069196			9069196		

(E) = EUROVENT certified performance.
(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m3 room and a reverberation time of 0.5 sec.

Electronic wall controls

WM-3V	3 speed control
WM-T	3 speed control with electronic thermostat and manual summer/winter switch
WM-TQR	3 speed control with electronic thermostat and centralized/manual summer/winter switch
WM-AU	Automatic speed control with electronic thermostat and summer/winter switch (to be used with UPM-AU or UP-AU only)
T-MB2	Wall control with LCD color display and WiFi (to be used with UPM-AU or UP-AU only)
WM-503-AC-EC	Automatic speed control with electronic thermostat to be mounted in the 503 box (to be used with UP-503-AC-EC only)
T2T	Electromechanical thermostat with summer/winter switch (only for 2 pipe units)
UPM-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, fitted on the unit
UP-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, not fitted on the unit
UP-503-AC-EC	UP-503-AC-EC power unit for WM-503-AC-EC remote control, not fitted on the unit

Electronic controls for MB boards

MB-M	MB electronic board fitted on the unit
MB-S	MB electronic board supplied with separate packaging
T-MB2	Wall control with LCD color display and WiFi (to be used with MB board only)
RS-RT03	Infra-red remote control with receiver supplied with separate packaging (to be used with MB board only)
RT03 / RR03	Infra-red remote control supplied with separate packaging (to be used with MB board only)
RT04	Infra-red remote control supplied with separate packaging (to be used with MB board only) - **Available from April 2025**
RS	Receiver for infra-red remote control supplied with separate packaging (to be used with MB board only)
PSM-DI	PSM-DI multifunction control panel (to be used with MB board only)
T-DI	T-DI touch screen multifunction control panel (to be used with MB board only)
SabWeb	Web gateway for Sabiana Cloud (to be used with MB board only)

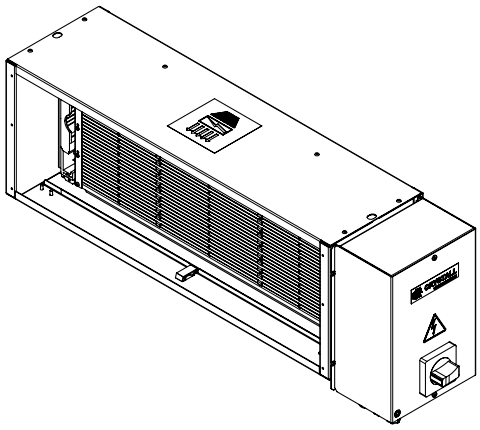
Sabianet management system for a network of fan coils	
Sabianet	Hardware/software supervisory system (to be used with MB board only)
Router-S	Router for Sabianet (default) or for BMS systems not provided by Sabiana
SIOS	Relay output board for Sabianet

Controls for KNX systems

KNX systems	
WM-KNX	Wall control with electronic thermostat and summer/winter switch (to be used with UP-KNX and PL mounting plate only)
UP-KNX	UP-KNX power unit supplied with separate packaging
PL-503-B	Mounting plate for rectangular box
PL-QUA-B	Mounting plate for rectangular box

NOTE: for more information about Controls and for full list of main Accessories, please see the dedicated pages.

Crystall CRY-CRSL



Crystall 50 filtering active electrostatic plenum for terminal unit **CRSL / CRSL-ECM**.

CRY-CRSL is an innovative filtering system to be used with the high pressure fan coil units Carisma CRSL/CRSL-ECM.
It is composed of three elements:

1. Active electrostatic Crystall 50 filtering assembly made of ionizing frame and filter pack
2. Metal covering frame properly equipped with flanges to allow an easy combination either towards the terminal unit and in regard to the duct or to any accessories such as flanges, silencers and plenums for a total adaptability
3. Wired control and power box available into the "fitted" on the plenum version

The active electrostatic filter allows a consistent reduction of the fine particles existing in the environment thanks to the high efficiency filtration, performance certified in accordance to the Standard in force EN ISO 16890.

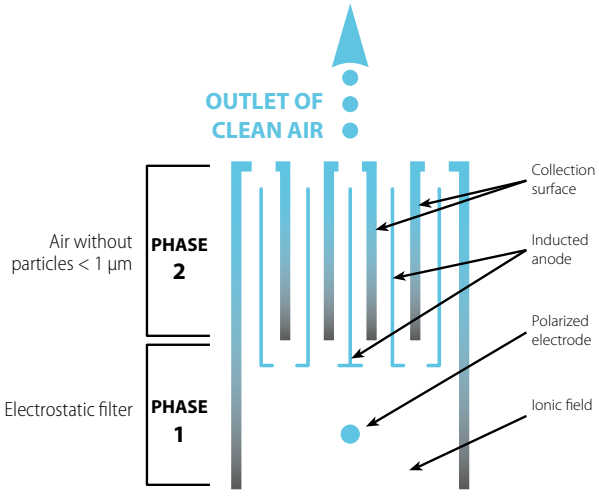
Operating principle of the Crystall Sabiana electrostatic filter

The air is sucked in and first passes a mechanical prefilter, which stops away particles of more than 50 µm (dust, insects, etc.).

Then the smallest particles (50÷0.01 µm) are exposed to an intensive ionic field and are polarized **(Phase 1)**.

The charged particles passing through the second filter section, are pushed back by the anode and attracted by the collection surfaces by a strong, inducted magnetic field **(Phase 2)**.

The air which leaves the unit is free from polluting particles.



Carisma CRSL-ECM

High Pressure Fan Coil Unit with EC Brushless Electronic Motor and Inverter Board

Range includes **6 air flow rates** (from 120 to 2980 m^3/h) each equipped with 3 or 4 row coil and with the possibility to add a 1 or 2 row coil for 4 pipe systems.
In high pressure ducted fan coils, the ability **to continuously vary** the air flow gives great regulation and control flexibility, at the same time **ensuring** excellent environmental conditions and extremely low electrical consumption.

The ECM range makes use of the excellent experience gained with the Cassette fan coils with inverter board, first in the world in production since 2009, and which have had great success on all markets.

The innovative synchronous electronic motor with permanent magnets, is controlled by an inverter board designed and developed in Italy.
The board is mounted on the unit, closed to the motor, without the need to be cooled down by the air flow.

TECHNICAL CHARACTERISTICS

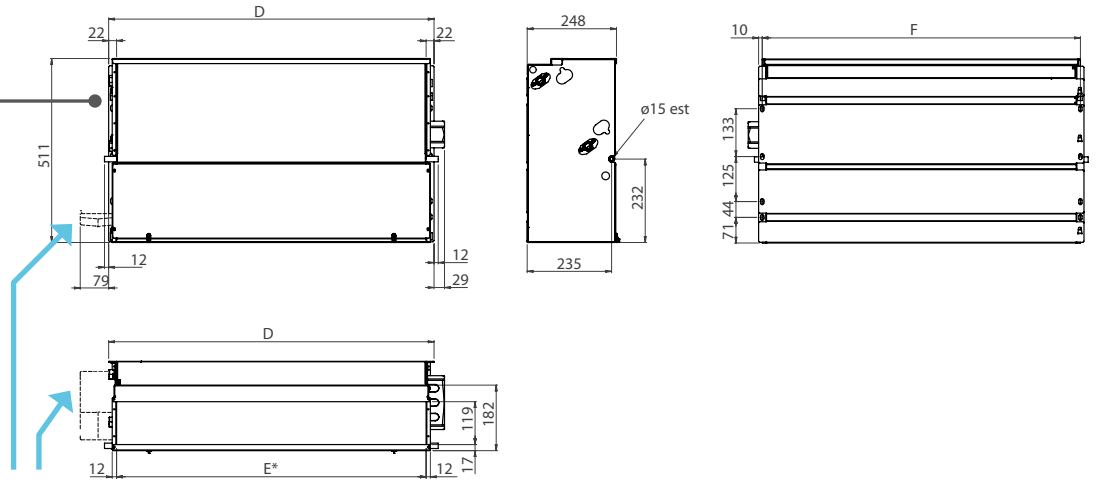
The air flow rate can be varied **in continuously** by means of a 1-10 V signal generated by Sabiana controls or by independent control systems.
The continuous air flow control improves the acoustic comfort and allows a quicker response to the variation of the thermal loads and a greater stability of the requested ambient temperature.

The extreme efficiency, also at low speed, makes it possible to greatly reduce electrical consumption (in comparison to CRSL AC motor) under normal operating conditions.
The excellent values of the CRSL-ECM range in terms of sound levels have been maintained **in all working conditions**, without any resonance phenomenon at any frequency.

The full compliance with the Electromagnetic Compatibility Directive and with the other severe Standards in force is certified by an independent institute.

For the technical characteristics of the various components refer to Carisma CRSL, **except for Electronic motor**:
Three phase permanent magnet electronic motor that is controlled with current reconstructed according to a **BLAC** sinusoidal wave.
The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a **switching system**, it generates a three-phase frequency modulated, wave form power supply.
The electric power supply required for the machine is therefore single-phase with voltage of **230 V** and frequency of **50 - 60 Hz**.

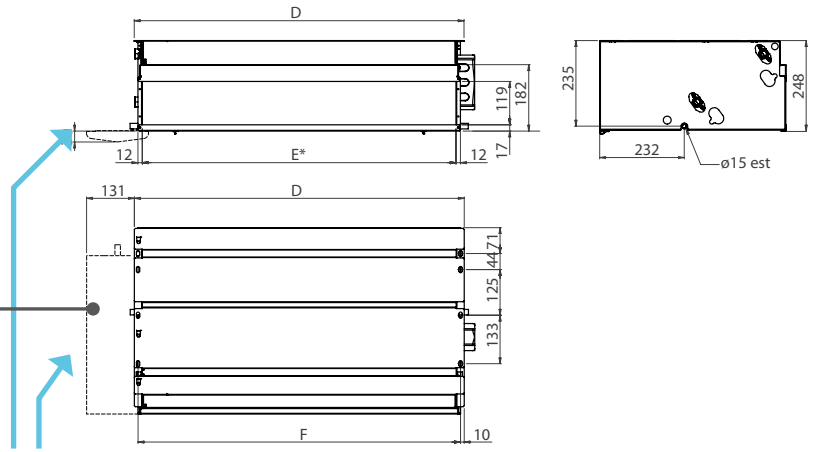
Vertical Installation



Auxiliary condensate tray (optional)

* Supply frame dimension = E x 119 mm

Horizontal Installation



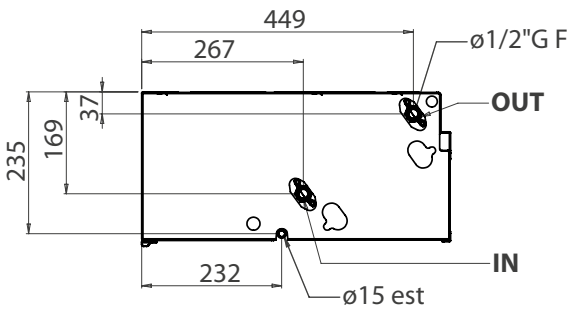
Auxiliary condensate tray (optional)

Coil connections on the left

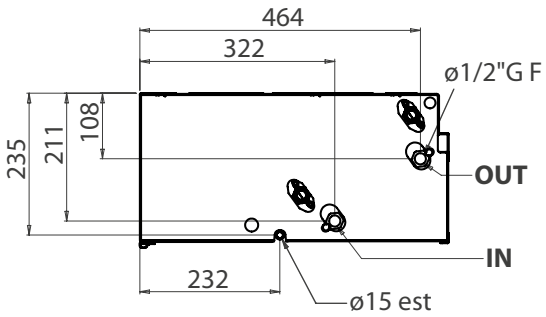
* Supply frame dimension = E x 119 mm

Coil connections

3 or 4 row coils



Heating additional coil
(1 or 2 rows)



Dimension (mm)

Model	0	1	2	4	7	8
D	474	689	904	1119	1549	1764
E	430	645	860	1075	1505	1720
F	454	669	884	1099	1529	1744

Weight (kg)

	Weight with packaging						Weight without packaging					
Model	**0**	**1**	**2**	**4**	**7**	**8**	**0**	**1**	**2**	**4**	**7**	**8**
3	15,8	18,9	25,0	29,4	49,5	53,1	13,8	16,9	22,6	26,4	44,5	48,9
3+1	16,5	20,1	26,4	31,2	51,7	55,5	14,5	18,1	24,0	28,1	46,7	51,3
3+2	17,0	20,8	27,4	32,3	-	-	15,0	18,8	25,4	29,3	-	-
4	16,3	19,9	26,0	30,5	51,6	55,8	14,3	17,9	23,6	27,5	46,6	51,6
4+1	17,0	21,1	27,4	32,3	53,9	58,2	15,0	19,1	26,0	29,3	48,9	54,0

Water content (litres)

Modello	0	1	2	4	7	8
3	0,5	0,9	1,6	1,9	3,2	3,7
4	0,7	1,3	2,2	2,8	4,2	4,8
+1	0,2	0,3	0,5	0,6	0,9	1,0
+2	0,4	0,6	1,0	1,2	-	-

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Units with 3 and 4 row coil

2 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

HEATING (winter mode)
Entering air temperature: +20 °C
Water temperature: +45 °C E.W.T. +40 °C L.W.T.

Model		CRSL-ECM 03			CRSL-ECM 13			CRSL-ECM 23			CRSL-ECM 43			CRSL-ECM 73			CRSL-ECM 83		
Inverter Power		1,5	5,5	8	4	6,3	8	4	6.5	8.5	3,5	7	9	2,5	5	8	5,5	7,5	9
Speed		**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**
Air flow **(E)**	m^3/h	110	225	290	240	305	360	430	540	630	595	850	980	900	1175	1410	1238	1638	1923
Available pressure **(E)**	Pa	10	50	75	32	50	68	34	50	70	24	50	66	30	50	72	28	50	70
Cooling total emission **(E)**	kW	0,75	1,39	1,65	1,64	1,97	2,23	2,72	3,21	3,55	3,84	4,94	5,43	5,66	6,81	7,67	6,75	8,60	10
Cooling sensible emission **(E)**	kW	0,55	1,00	1,30	1,17	1,42	1,63	1,99	2,38	2,68	2,83	3,77	4,21	4,15	5,11	5,86	5,05	6,50	7,80
Heating **(E)**	kW	0,80	1,50	1,90	1,65	2,05	2,37	2,88	3,51	4,00	4,07	5,56	6,27	5,69	7,09	8,24	7	9,25	10,7
Dp Cooling **(E)**	kPa	3,5	6,7	9,2	13,3	18,7	23,5	11,5	15,6	18,9	11,8	18,9	22,5	12,1	17,1	21,4	19	29	39
Dp Heating **(E)**	kPa	1,7	5,5	8,0	11,6	17,0	22,1	10,2	14,6	18,5	10,6	18,6	23,0	9,8	14,6	19,1	25	34	43
Fan **(E)**	W	7	21	37	18	29	39	26	43	64	30	67	98	52	100	155	84	160	246
Sound power outlet **(E)**	dB(A)	29	43	48	38	44	48	42	47	49	44	52	55	47	54	57	49	56	59
Sound power inlet + radiated **(E)**	dB(A)	36	50	55	45	51	55	48	55	58	51	59	62	54	61	64	56	63	66
Sound pressure outlet **(*)**	dB(A)	20	34	39	29	35	39	33	38	40	35	43	46	38	45	48	40	47	50
Sound pressure inlet + radiated **(*)**	dB(A)	27	41	46	36	42	46	39	46	49	42	50	53	45	52	55	47	54	57
Plenum code		9069190			9069191			9069222			9066368			9069196			9069198		

Model		CRSL-ECM 04			CRSL-ECM 14			CRSL-ECM 24			CRSL-ECM 44			CRSL-ECM 74			CRSL-ECM 84		
Inverter Power		1,5	5,5	8	4	6,3	8	4	6.5	8.5	3,5	7	9	2,5	5	8	5,5	7,5	9
Speed		**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**
Air flow **(E)**	m^3/h	110	225	290	240	305	360	430	540	630	595	850	980	900	1175	1410	1238	1638	1923
Available pressure **(E)**	Pa	10	50	75	32	50	68	34	50	70	24	50	66	30	50	72	28	50	70
Cooling total emission **(E)**	kW	0,80	1,55	1,95	1,77	2,17	2,48	3,14	3,79	4,25	4,09	5,34	5,91	6,12	7,46	8,47	7,20	9,25	10,6
Cooling sensible emission **(E)**	kW	0,60	1,15	1,45	1,25	1,54	1,78	2,20	2,68	3,04	2,95	3,97	4,45	4,40	5,48	6,33	5,50	7,10	8,20
Heating **(E)**	kW	0,80	1,65	2,00	1,73	2,17	2,52	3,08	3,80	4,37	4,19	5,77	6,55	6,26	7,96	9,35	8	10	11,5
Dp Cooling **(E)**	kPa	3,5	10,8	15,4	7,2	10,3	13,2	17,5	24,7	30,6	7,7	12,6	15,2	9,9	14,3	18,1	20	30	40
Dp Heating **(E)**	kPa	2,6	8,1	12,3	6,7	9,9	13,1	14,1	20,6	26,6	6,5	11,5	14,5	8,9	13,8	18,4	20	30	39
Fan **(E)**	W	7	21	37	18	29	39	26	43	64	30	67	98	52	100	155	84	160	246
Sound power outlet **(E)**	dB(A)	29	43	48	38	44	48	42	47	49	44	52	55	47	54	57	49	56	59
Sound power inlet + radiated **(E)**	dB(A)	36	50	55	45	51	55	48	55	58	51	59	62	54	61	64	56	63	66
Sound pressure outlet **(*)**	dB(A)	20	34	39	29	35	39	33	38	40	35	43	46	38	45	48	40	47	50
Sound pressure inlet + radiated **(*)**	dB(A)	27	41	46	36	42	46	39	46	49	42	50	53	45	52	55	47	54	57
Plenum code		9069190			9069191			9069222			9066368			9069196			9069198		

(E) = EUROVENT certified performance.
(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberationtime of 0.5 sec.

Electronic wall controls

WM-AU	Automatic speed control with electronic thermostat and summer/winter switch (to be used with UPM-AU or UP-AU only)
T-MB2	Wall control with LCD color display and WiFi (to be used with UPM-AU or UP-AU only)
WM-503-AC-EC	Automatic speed control with electronic thermostat to be mounted in the 503 box (to be used with UP-503-AC-EC only)
WM-S-ECM	Continuous fan speed control with electronic thermostat, summer/winter switch and liquid crystal display
UPM-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, fitted on the unit
UP-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, not fitted on the unit
UP-503-AC-EC	UP-503-AC-EC power unit for WM-503-AC-EC remote control, not fitted on the unit

Electronic controls for MB boards

MB-ECM-M	MB electronic board fitted on the unit
MB-ECM-S	MB electronic board supplied with separate packaging
T-MB2	Wall control with LCD color display and WiFi (to be used with MB board only)
RS-RT03	Infra-red remote control with receiver supplied with separate packaging (to be used with MB board only)
RT03 / RR03	Infra-red remote control supplied with separate packaging (to be used with MB board only)
RT04	Infra-red remote control supplied with separate packaging (to be used with MB board only) - **Available from April 2025**
RS	Receiver for infra-red remote control supplied with separate packaging (to be used with MB board only)
PSM-DI	PSM-DI multifunction control panel (to be used with MB board only)
T-DI	T-DI touch screen multifunction control panel (to be used with MB board only)
SabWeb	Web gateway for Sabiana Cloud (to be used with MB board only)

Sabianet management system for a network of fan coils	
Sabianet	Hardware/software supervisory system (to be used with MB board only)
Router-S	Router for Sabianet (default) or for BMS systems not provided by Sabiana
SIOS	Relay output board for Sabianet

Controls for KNX systems

KNX systems	
WM-KNX	Wall control with electronic thermostat and summer/winter switch (to be used with UP-KNX and PL mounting plate only)
UP-KNX	UP-KNX power unit supplied with separate packaging
PL-503-B	Mounting plate for rectangular box
PL-QUA-B	Mounting plate for rectangular box

IAQ accessory

Crystall accessory available also for CRSL-ECM (see CRSL dedicated page)

NOTE: for more information about Controls and for full list of main Accessories, please see the dedicated pages.

PMC Multizone Plenum

Air Distribution System for Carisma CRSL and CRSL-ECM

Carisma Multizone is an advanced air distribution system suitable for centralised installations where the comfort of each environment must be adapted to individual needs.
It can be fitted on Carisma CRSL and Carisma CRSL-ECM ducted fan coils.

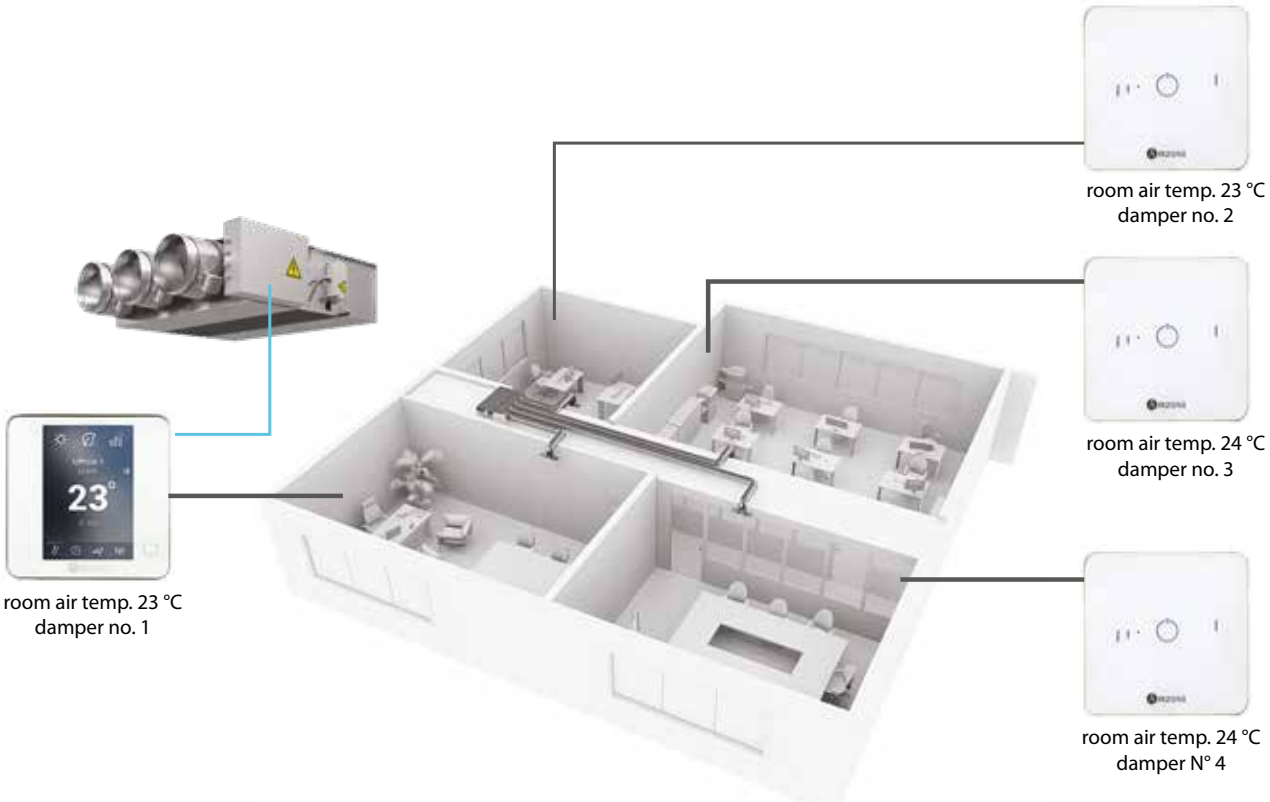
The **Multizone** system comprises a plenum with spigots, modulating dampers and electronic control for managing different temperatures through varying the air flows in each of the air-conditioned zones.
The controls allow separate programming for the different zones; the system can also interface with supervisory systems via Modbus.

The modulating dampers are motorised, adjustable and are managed by the electronic control.

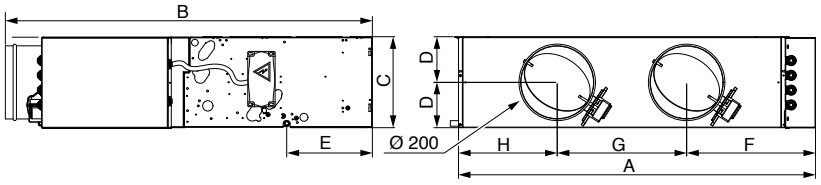
The plenum is delivered complete with all components (power board, control for asynchronous or ECM motors and motorised dampers) already assembled, while the thermostat and sensors must be ordered separately; the plenum is fitted with a male terminal block for quick connections to the female terminal block on the fan coil.

Each system requires one **BLUEZERO wall control** (which also serves as the zone sensor) plus one **Zone sensor** for each zone, up to a maximum of four per system (five zones in total, including the BLUEZERO wired wall control); the plenum, wall control and zone sensors must be connected using the Multizone communication cable (available in 15 m or 100 m lengths).

Benefits: as well as improving aesthetics, with one ducted indoor unit is possible to air-condition several rooms, independently managing fan speed and air flow.

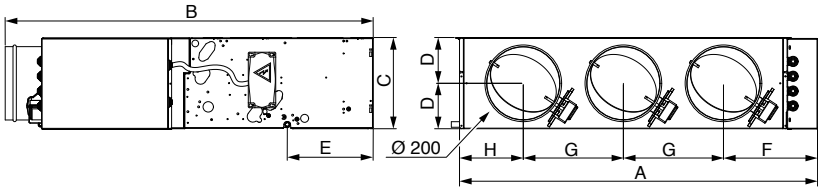


Plenum with two spigots for CRSL / CRSL-ECM - size 2



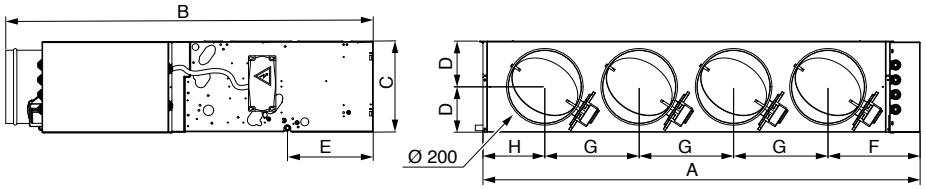
Size	Dimensions (mm)								Weight (kg)
	A	B	C	D	E	F	G	H	
2	966	993	248	124	230	349	350	267	11,0

Plenum with three spigots for CRSL / CRSL-ECM - sizes 2, 3 and 4



Size	Dimensions (mm)								Weight (kg)
	A	B	C	D	E	F	G	H	
2	966	993	248	124	230	254	270	172	12,3
3 - 4	1.181	993	248	124	230	284	347,5	202	13,5

Plenum with four spigots for CRSL / CRSL-ECM - sizes 3 - 4



Size	Dimensions (mm)								Weight (kg)
	A	B	C	D	E	F	G	H	
3 - 4	1.181	993	248	124	230	249	255	167	14,8

Controls

MZ-BLZ **BLUEZERO wall control**

Wall thermostat with tempered glass touchscreen and steel casing

- Zone thermostat.
- ON/OFF programming for each.
- Programming of seasonal change-over.
- Energy Saving mode with setpoint limitation.
- Humidity sensor.
- Wall-mounted using the support supplied.

MZ-SZ **Zone sensor**

Wall sensor with steel and glass casing with touch buttons

- Zone ON/OFF.
- Room temperature and relative humidity reading.
- Temperature set point adjustment ± 3 °C.

Accessories

MZ-C15 **Multizone communication cable, 15 m**

(for connecting the thermostats or receivers to the board)

MZ-C100 **Multizone communication cable, 100 m**

(for connecting the thermostats or receivers to the board)

Maestro MTL

High Pressure Fan Coil Unit with Asynchronous Motor

The **Maestro high pressure** fan coils are produced in 7 sizes.
Designed and built for concealed installations, they have small dimensions, are very silent and have a particularly interesting price in relation to their performance (elevated air flow rates and available static pressures up to 160 Pa for sizes 1-5 and 250 Pa for sizes 6-7).

They are suitable for climate control for small and medium commercial and sports environments or for large civil environments and integrate perfectly in regular false ceilings.
The sizes 1÷5 are equipped with **5 speed** fans, 3 of which are connected to the terminal board while the sizes 6-7 are equipped with **3 speed** fans.
The base models call for a 4 row coil but upon request, units with 3 row coils or additional coils (for 4 pipe systems) with one or two rows can be provided.
A complete set of accessories solves any type of system problem.

TECHNICAL CHARACTERISTICS

Casing: made of galvanized steel, 1 mm thick for sizes 1÷3 and 1,2 mm for sizes 4÷7, insulated with 10 mm polyolefin (PO) foam (B-s2-d0 EN 13501-1).

Fan assembly: consists of quiet centrifugal fans with two impellers (made of plastic for sizes 1÷5 and made of aluminium for sizes 6÷7) and a directly driven single phase motor (230V 50Hz).

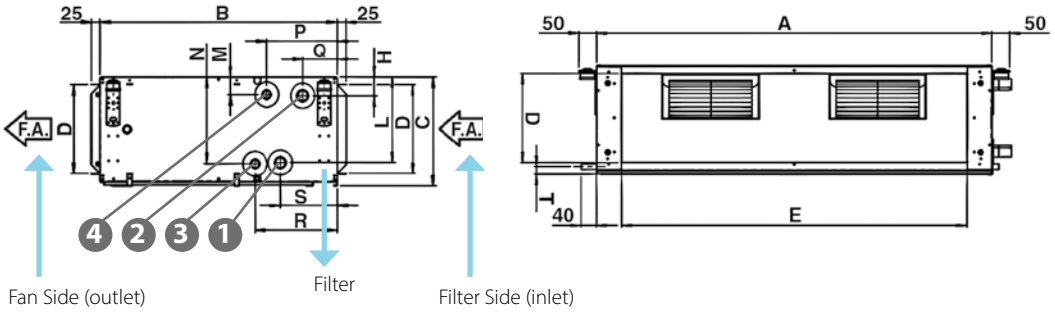
Coil: it is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process.
The Maestro Sabiana range is available with the combination of either 3 or 4 row coils (sizes 1÷5) with the possibility to add a 1 or 2 row coil (3+1, 4+1, 3+2, 4+2 versions for 4 pipe systems), and 4 or 6 row coils (sizes 6-7) with the possibility to add a 2 row coil (4+2, 6+2 versions for 4 pipe systems).
The connections are on the left hand side looking from the air inlet of the unit (see picture).
On request or on site the connections can be moved to the other side.
The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.

Filter: polypropylene cellular fabric regenerating filter.
The filter frame of galvanized steel is inserted into sliding guides fastened to the internal structure for easy insertion and removal of the filter.

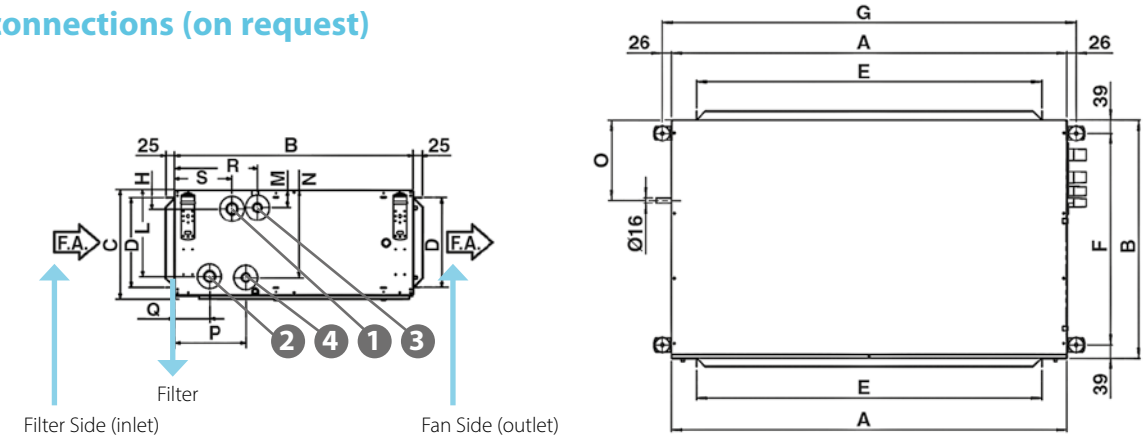
Condensate collection tray: made from galvanized steel insulated with 3 mm polyolefin (PO) foam (B-s2-d0 EN 13501-1).

All range is compliant with the **(EU) Regulation No. 327/2011** which requires **very low electric consumption ratings** in relation to performances provided.

Left connections (standard)



Right connections (on request)



Model	Dimensions (mm)			
	O	P	Q	R
MTL 1÷5	209	103	169	243
MTL 6-7	304	154	264	338

Model	Dimensions											Coil			
												Main		Additional	
	A	B	C	D	E	F	G	H	L	M	N	1	2	3	4
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	IN	OUT	IN	OUT
MTL 1	1133	698	310	255	991	620	1185	54	245	50	249	3/4"	3/4"	3/4"	3/4"
MTL 2	1133	698	310	255	991	620	1185	54	245	50	249	1"	1"	3/4"	3/4"
MTL 3	1133	698	360	305	991	620	1185	54	295	50	299	1"	1"	3/4"	3/4"
MTL 4	1445	853	360	293	1302	775	1497	58	291	54	295	1 1/4"	1 1/4"	1"	1"
MTL 5	1445	853	435	368	1302	775	1497	58	367	54	370	1 1/4"	1 1/4"	1"	1"
MTL 6	1535	1100	488	421	1393	1022	1587	59	416	55	421	1 1/4"	1 1/4"	1"	1"
MTL 7	1535	1100	588	521	1393	1022	1587	59	516	55	521	1 1/4"	1 1/4"	1"	1"

Model	Weight without packaging (kg)						Weight with packaging (kg)						Water content (litres)			
	3R	3+1R	3+2R	4R	4+1R	4+2R	3R	3+1R	3+2R	4R	4+1R	4+2R	3R	4R	1R	2R
MTL 1	45	48	50	47	50	51	48	51	53	50	53	54	2,0	2,6	0,9	1,5
MTL 2	46	50	52	48	51	53	49	53	55	51	54	56	2,9	3,7	1,1	1,8
MTL 3	54	58	60	56	60	62	57	61	63	59	63	65	3,5	4,6	1,4	2,4
MTL 4	75	80	83	78	83	86	79	84	87	82	87	90	4,7	6,0	2,0	3,2
MTL 5	85	90	94	88	94	98	89	94	98	92	98	102	5,7	7,1	2,7	4,1

	4R	4+2R	6R	6+2R	4R	4+2R	6R	6+2R	4R	6R	2R
MTL 6	124	134	130	140	127	137	133	143	7,6	11,1	4,1
MTL 7	140	152	148	160	143	155	151	163	9,7	13,8	5,5

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Units with 4 row coil

2 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27 °C d.b. +19°C w.b.
Water temperature: +7 °C E.W.T. +12°C L.W.T.

HEATING (winter mode)
Entering air temperature: +20 °C
Water temperature: +45 °C E.W.T. +40 °C L.W.T.

Model MTL		14			24			34			44			54 (**)			64 (**)			74 (**)		
Speed (E)		**1**	**3**	**5**	**1**	**3**	**5**	**1**	**3**	**5**	**1**	**3**	**5**	**1**	**3**	**5**	**1**	**3**	**5**	**1**	**3**	**5**
Air flow **(E)**	m^3/h	790	1125	1410	840	1410	1825	1710	2075	2440	2070	2580	3020	2740	3280	3850	1880	3385	4800	3925	5070	7100
Available pressure **(E)**	Pa	25	50	75	15	50	80	30	50	70	35	50	70	35	50	67	150	150	150	150	150	150
Cooling total emission **(E)**	kW	4,17	5,21	5,92	4,99	7,01	8,15	8,71	9,76	10,71	10,90	12,40	13,60	14,54	16,19	17,76	12,42	18,73	22,89	21,54	25,33	30,63
Cooling sensible emission **(E)**	kW	3,25	4,26	5,03	3,66	5,48	6,62	6,67	7,68	8,65	8,25	9,70	10,90	11,21	12,80	14,37	8,88	14,16	17,98	16,05	19,46	24,53
Heating **(E)**	kW	4,98	6,44	7,67	5,57	8,27	10,10	10,20	11,80	13,19	12,79	14,92	16,53	17,67	20,32	22,93	20,86	33,52	43,60	39,34	47,85	61,14
Dp Cooling **(E)**	kPa	5,1	7,6	9,6	6,9	12,7	16,8	16,0	19,8	23,4	13,9	17,7	20,9	13,3	16,3	19,4	7,4	15,3	22,6	14,4	19,3	27,6
Dp Heating **(E)**	kPa	5,2	8,2	11,3	6,2	17,0	18,3	15,6	23,0	24,8	13,4	17,7	21,3	14,2	18,3	22,8	3,9	9,1	14,7	8,5	12,1	18,8
Fan **(E)**	W	115	154	191	170	230	285	350	420	470	390	490	570	500	617	760	574	778	1304	1518	1758	2460
Sound power outlet **(E)**	dB(A)	44	52	58	44	56	61	57	62	65	59	63	66	63	67	70	63	71	77	71	75	81
Sound power inlet + radiated **(E)**	dB(A)	47	55	60	47	59	64	60	64	67	61	65	68	65	69	72	-	-	-	-	-	-
Sound pressure outlet **(*)**	dB(A)	35	43	49	35	47	52	48	53	56	50	54	57	54	58	61	54	62	68	62	66	72
Sound pressure inlet + radiated **(*)**	dB(A)	38	46	51	38	50	55	51	55	58	52	56	59	56	60	63	-	-	-	-	-	-
Plenum code		9034200			9034200			9034220			9034230			9034240			9034280			9034290		

Units with additional coil

4 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

HEATING (winter mode)
Entering air temperature: +20 °C
Water temperature: +65 °C E.W.T. +55 °C L.W.T.

Model MTL		14+1			24+1			34+1			44+1			54+1 (**)			64+2 (**)			74+2 (**)		
Speed (E)		**1**	**3**	**5**	**1**	**3**	**5**	**1**	**3**	**5**	**1**	**3**	**5**	**1**	**3**	**5**	**1**	**3**	**5**	**1**	**3**	**5**
Air flow **(E)**	m^3/h	770	1090	1350	840	1390	1775	1680	2045	2390	2055	2545	2960	2700	3245	3800	1860	3330	4680	3920	5040	6980
Available pressure **(E)**	Pa	25	50	75	15	50	80	30	50	70	35	50	70	35	50	70	150	150	150	150	150	150
Cooling total emission **(E)**	kW	4,09	5,11	5,79	4,99	6,96	8,03	8,61	9,67	10,58	10,85	12,34	13,46	13,75	15,31	16,73	12,33	18,56	22,52	21,53	25,25	30,36
Cooling sensible emission **(E)**	kW	3,18	4,16	4,87	3,66	5,42	6,49	6,58	7,60	8,51	8,21	9,61	10,72	10,62	12,13	13,56	8,81	14,02	17,62	16,05	19,39	24,28
Heating **(E)**	kW	3,96	4,87	5,47	4,63	6,28	7,16	7,62	8,47	9,20	9,83	11,07	12,00	12,67	14,00	15,28	19,81	29,78	37,13	35,50	41,88	51,31
Dp Cooling **(E)**	kPa	4,90	7,30	9,20	6,90	12,50	16,30	15,70	19,40	22,90	13,80	17,40	20,50	12,00	14,70	17,40	7,30	15,00	22,00	14,40	19,10	27,10
Dp Heating **(E)**	kPa	11,7	17,0	21,0	14,5	25,2	31,9	15,9	19,3	22,3	27,6	34,1	39,5	26,0	31,1	36,3	11,9	24,9	37,0	23,8	32,0	46,1
Fan **(E)**	W	115	154	191	170	230	285	350	420	470	390	490	570	500	617	760	565	750	1327	1499	1727	2376
Sound power outlet **(E)**	dB(A)	44	52	58	44	56	61	57	62	65	59	63	66	63	67	70	63	71	77	71	75	81
Sound power inlet + radiated **(E)**	dB(A)	47	55	60	47	59	64	60	64	67	61	65	68	65	72	72	-	-	-	-	-	-
Sound pressure outlet **(*)**	dB(A)	35	43	49	35	47	52	48	53	56	50	54	57	54	58	61	54	62	68	62	66	72
Sound pressure inlet + radiated **(*)**	dB(A)	38	46	51	38	50	55	51	55	58	52	56	59	56	60	63	-	-	-	-	-	-
Plenum code		9034200			9034200			9034220			9034230			9034240			9034280			9034290		

(E) = EUROVENT certified performance.
(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.
(**) = Models not covered by EUROVENT certification program.

Kit 230V

Main and auxiliary coil valve kit
(to be used only with QCV-MB2 control board and WM-T, WM-TQR, WM-AU and T-MB2 controls)

230 V, ON-OFF valve.

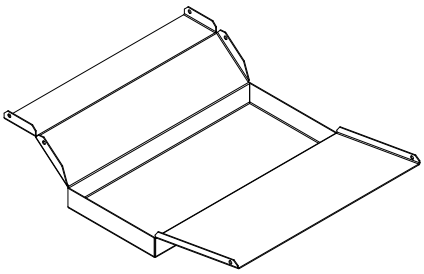
Kit 24V

Main and auxiliary coil valve kit
(to be used only with QCV-MB2 modulating valve control board)

Valve with 3 points - 24 Volt actuator.

BCM

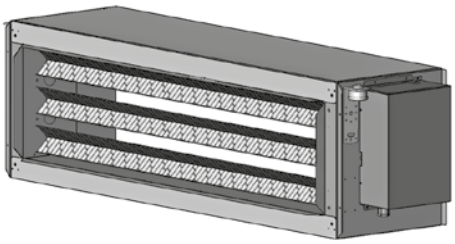
External auxiliary condensate collection tray



BEM

Electric coil

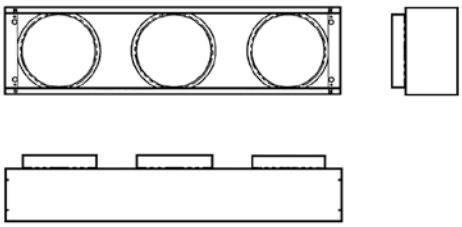
Consists of electric resistances and a security thermostat, which are inside a galvanized steel and insulated casing.



PMM

Intake/supply spigot plenum

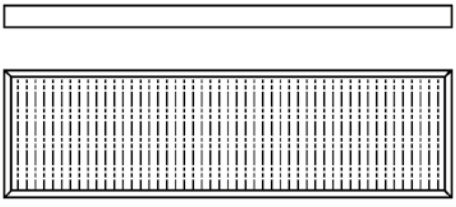
Intake/supply spigot plenum with 3 spigots (Sizes 1 - 2 - 3) or 4 spigots (Sizes 4 - 5 - 6 - 7).



SFM

ePM$_{10}$ 50% - G4 class synthetic filter

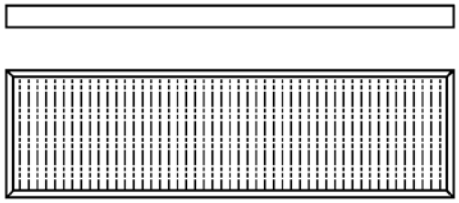
The filter is a washable synthetic fibre, flame-proof according to Class F1 DIN 53438.
Compliant with: EN 16890.



SFM-F6

ePM$_{10}$ 70% - F6 class Synthetic Filter
(for sizes 6 ÷7 only)

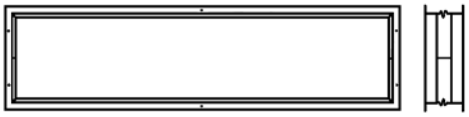
High efficiency compact filter in glass microfiber paper. Compliant with: EN 16890.



GAV

Antivibrating connection

Intake/supply antivibrating connection, made of two galvanized frames and a PVC flexible connection.



Electronic wall controls

COM	Speed selector with 4 positions: OFF, first speed, second speed, third speed
WM-3V	3 speed control
WM-T	3 speed control with electronic thermostat and manual summer/winter switch
WM-TQR	3 speed control with electronic thermostat and centralized/manual summer/winter switch
WM-AU	Automatic speed control with electronic thermostat and summer/winter switch (to be used with UPOM-AU or UPO-AU only)
T-MB2	Wall control with LCD color display and WiFi (to be used with UPOM-AU or UPO-AU only)
SEL-S	Receiving board for centralized control
UPOM-AU	UPO-AU power unit for WM-AU and T-MB2 remote controls, fitted on the unit
UPO-AU	UPO-AU power unit for WM-AU and T-MB2 remote controls, not fitted on the unit

Electronic controls for MB boards

QCV-MB2	MB control panel version (T-MB2 wall control included)
PSM-DI	PSM-DI multifunction control panel (to be used with QCV-MB2 control panel only)
T-DI	T-DI touch screen multifunction control panel (to be used with QCV-M2B control panel only)
SabWeb	Web gateway for Sabiana Cloud (to be used with QCV-MB2 control panel only)

Sabianet management system for a network of fan coils	
Sabianet	Sabianet (to be used with QCV-MB 2control panel only)
Router-S	Router for Sabianet (default) or for BMS systems not provided by Sabiana (to be used with QCV-MB2 control panel only)
SIOS	Relay output board for Sabianet (to be used with QCV-MB2 control panel only)

NOTE: for more information about Controls, please see the dedicated pages.

Maestro MTL-ECM

High Pressure Fan Coil Unit with EC Brushless Electronic Motor and Inverter Board

The **Maestro MTL-ECM high pressure** fan coils are produced in 6 sizes.
Designed and built for concealed installations, they have small dimensions, are very silent and have a particularly interesting price in relation to their performance (elevated air flow rates and available static pressures up to 240 Pa).
They are suitable for climate control for small and medium commercial and sports environments or for large civil environments and integrate perfectly in regular false ceilings.
In high pressure ducted fan coils, the ability to **continuously** vary the air flow gives great regulation and control flexibility, at the same time **ensuring** excellent environmental conditions and extremely low electrical consumption.

The ECM range makes use of the excellent experience gained with the SkyStar Cassette fan coils with inverter board, first in the world in production since 2009, and which have had great success on all markets.

The innovative synchronous electronic motor with permanent magnets, is controlled by an electronic board (inverter).

TECHNICAL CHARACTERISTICS

The air flow rate can be varied **in continuously** by means of a 1-10 V signal generated by Sabiana controls or by independent control systems.

The continuous air flow control improves the acoustic comfort and allows a more punctual reply to the variation of the thermal loads and a greater stability of the requested ambient temperature.

The extreme efficiency, also at low speed, makes possible a great reduction in electric consumption (in comparison to the yet efficient MTL motor) under normal operating conditions. The excellent values of the MTL-ECM range have been maintained **in all working conditions**, without any resonance phenomenon at any frequency.

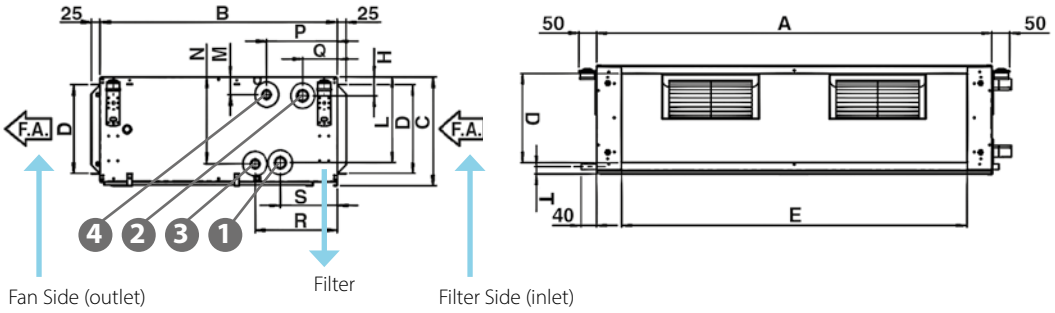
The full compliance with the Electromagnetic Compatibility Directive and with the other severe Standards in force is certified by an independent institute.

For the technical characteristics of the various components refer to High Pressure Fan Coil Maestro MTL unit, except for **Electronic motor**: three phase permanent magnet electronic one that is controlled with current reconstructed according to a **BLAC** sinusoidal wave.

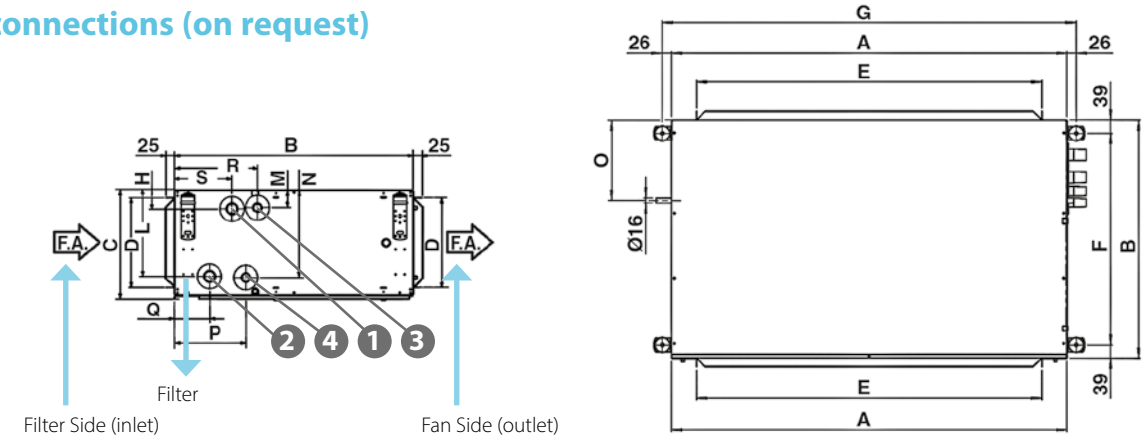
The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a **switching system**, it generates a three-phase frequency modulated, wave form power supply. The electric power supply required for the machine is therefore single-phase with voltage of **230 V** and frequency of **50 - 60 Hz**.

All range is compliant with the **(EU) Regulation No. 327/2011** which requires very low electric consumption ratings in relation to performances provided.

Left connections (standard)



Right connections (on request)



Model	Dimensions (mm)			
	O	P	Q	R
MTL-ECM 1÷6	209	103	169	243

Model	Dimensions											Coil			
												Main		Additional	
	A	B	C	D	E	F	G	H	L	M	N	1	2	3	4
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	IN	OUT	IN	OUT
MTL-ECM 1	1133	698	310	255	991	620	1185	54	245	50	249	3/4"	3/4"	3/4"	3/4"
MTL-ECM 2	1133	698	310	255	991	620	1185	54	245	50	249	1"	1"	3/4"	3/4"
MTL-ECM 3	1133	698	360	305	991	620	1185	54	295	50	299	1"	1"	3/4"	3/4"
MTL-ECM 4	1445	853	360	293	1302	775	1497	58	291	54	295	1 1/4"	1 1/4"	1"	1"
MTL-ECM 5	1445	853	435	368	1302	775	1497	58	367	54	370	1 1/4"	1 1/4"	1"	1"
MTL-ECM 6	1535	1100	488	421	1393	1022	1587	59	416	55	421	1 1/4"	1 1/4"	1"	1"

Model	Weight without packaging (kg)								Weight with packaging (kg)								Water content (litres)				
	3R	3+1R	3+2R	4R	4+1R	4+2R	6R	6+2R	3R	3+1R	3+2R	4R	4+1R	4+2R	6R	6+2R	3R	4R	6R	1R	2R
MTL-ECM 1	45	48	50	47	50	51	-	-	48	51	53	50	53	54	-	-	2,0	2,6	-	0,9	1,5
MTL-ECM 2	46	50	52	48	51	53	-	-	49	53	55	51	54	56	-	-	2,9	3,7	-	1,1	1,8
MTL-ECM 3	54	58	60	56	60	62	-	-	57	61	63	59	63	65	-	-	3,5	4,6	-	1,4	2,4
MTL-ECM 4	75	80	83	78	83	86	-	-	79	84	87	82	87	90	-	-	4,7	6,0	-	2,0	3,2
MTL-ECM 5	85	90	94	88	94	98	-	-	89	94	98	92	98	102	-	-	5,7	7,1	-	2,7	4,1
MTL-ECM 6	-	-	-	124	-	134	130	140	-	-	-	127	-	137	133	143	-	7,6	11,1	-	4,1

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Units with 4 row coil

2 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27 °C d.b. +19°C w.b.
Water temperature: +7 °C E.W.T. +12°C L.W.T.

HEATING (winter mode)
Entering air temperature: +20 °C
Water temperature: +45 °C E.W.T. +40 °C L.W.T.

Model MTL-ECM		14			24			34			44			54		
Inverter Power (E)	V	4,5	7	9	4	6	8	4,5	6,5	8	5,5	7,5	10	3	5	7
Speed (E)		**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**
Air flow **(E)**	m^3/h	780	1100	1310	940	1360	1780	1380	1950	2390	1840	2440	3080	2400	3320	3920
Available pressure **(E)**	Pa	26	50	70	24	50	85	25	50	75	28	50	80	25	50	70
Cooling total emission **(E)**	kW	4,14	5,11	5,61	5,44	6,86	7,94	7,87	9,70	10,81	10,47	12,39	13,99	13,73	16,70	18,17
Cooling sensible emission **(E)**	kW	3,24	4,18	4,72	4,08	5,36	6,44	5,93	7,61	8,72	7,90	9,65	11,23	10,46	13,26	14,75
Heating **(E)**	kW	5,18	6,80	7,76	6,42	8,64	10,62	8,64	11,25	13,06	12,13	15,15	18,08	15,90	20,51	23,25
Dp Cooling **(E)**	kPa	4,9	7,2	8,7	7,7	11,8	15,8	11,7	17,4	21,6	12,2	16,9	21,7	12,3	17,9	21,4
Dp Heating **(E)**	kPa	6,5	10,7	13,7	7,5	12,9	18,8	10,1	16,4	21,4	11,6	17,4	23,9	12,8	20,3	25,4
Fan **(E)**	W	40	88	144	44	110	225	80	195	340	110	253	530	166	383	702
Sound power outlet **(E)**	dB(A)	45	52	59	45	55	61	52	60	64	55	62	67	58	67	71
Sound power inlet + radiated **(E)**	dB(A)	48	55	61	48	57	63	55	62	66	58	64	69	61	70	73
Sound pressure outlet **(*)**	dB(A)	36	43	50	36	46	52	43	51	55	46	53	58	49	58	62
Sound pressure inlet + radiated **(*)**	dB(A)	39	46	52	39	48	54	46	53	57	49	55	60	52	61	64
Plenum code		9034200			9034200			9034220			9034230			9034240		
																(**)

Model MTL-ECM		64			66		
Inverter Power (E)	V	3	6	9	3	6	9
Speed (E)		**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**
Air flow **(E)**	m^3/h	2825	4295	5205	2825	4295	5205
Available pressure **(E)**	Pa	22	50	74	22	50	74
Cooling total emission **(E)**	kW	16,91	21,91	24,3	20,36	27,2	30,64
Cooling sensible emission **(E)**	kW	12,85	17,79	20,3	14,47	20,39	23,48
Heating **(E)**	kW	18,63	25,83	29,76	20,74	29,57	34,54
Dp Cooling **(E)**	kPa	15,9	25,9	31,8	21,3	36,6	46,1
Dp Heating **(E)**	kPa	14,2	25,6	33,1	16,7	31,7	42
Fan **(E)**	W	106	330	636	109	339	654
Sound power outlet **(E)**	dB(A)	57	69	73	57	69	73
Sound power inlet + radiated **(E)**	dB(A)	60	71,5	75	60	71,5	75
Sound pressure outlet **(*)**	dB(A)	48	60	64	48	60	64
Sound pressure inlet + radiated **(*)**	dB(A)	51	63	66	51	63	66
Plenum code		9034280			9034280		
			(**)			**(**)**	

(E) = EUROVENT certified performance.
(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.
(**) = Models not covered by EUROVENT certification program.

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Units with additional coil

4 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

HEATING (winter mode)
Entering air temperature: +20 °C
Water temperature: +65 °C E.W.T. +55 °C L.W.T.

Model MTL-ECM		14+1			24+1			34+1			44+1			54+1		
Inverter Power (E)	V	4,5	7	9	4	6	8	4,5	6,5	8	5,5	7,5	10	3	5	7
Speed (E)		**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**
Air flow **(E)**	m^3/h	750	1040	1250	920	1340	1750	1350	1920	2350	1810	2400	3040	2380	3300	3860
Available pressure **(E)**	Pa	26	50	72	24	50	85	25	50	75	28	50	80	26	50	68
Cooling total emission **(E)**	kW	4,04	4,94	5,46	5,36	6,79	7,87	7,76	9,59	10,70	10,36	12,27	13,90	13,66	16,62	18,00
Cooling sensible emission **(E)**	kW	3,14	4,01	4,55	4,01	5,30	6,35	5,83	7,51	8,61	7,79	9,53	11,13	10,39	13,19	14,58
Heating **(E)**	kW	3,43	4,18	4,62	4,33	5,42	6,25	5,90	7,20	8,02	8,06	9,48	10,75	10,53	12,67	13,77
Dp Cooling **(E)**	kPa	4,6	6,8	8,3	7,5	11,6	15,5	11,4	17,1	21,2	12,0	16,6	21,4	11,2	16,3	19,4
Dp Heating **(E)**	kPa	9,4	13,4	16,0	13,6	20,4	26,4	9,9	14,3	17,3	19,6	26,3	33,0	18,5	25,7	29,9
Fan **(E)**	W	40	88	144	44	115	225	80	200	340	110	253	530	168	384	695
Sound power outlet **(E)**	dB(A)	45	52	59	45	55	61	52	60	64	55	62	67	58	67	71
Sound power inlet + radiated **(E)**	dB(A)	48	55	61	48	57	63	55	62	66	58	64	69	61	70	73
Sound pressure outlet **(*)**	dB(A)	36	43	50	36	46	52	43	51	55	46	53	58	49	58	62
Sound pressure inlet + radiated **(*)**	dB(A)	39	46	52	39	48	54	46	53	57	49	55	60	52	61	64
Plenum code		9034200			9034200			9034220			9034230			9034240		
																(**)

Model MTL-ECM		64+2			66+2		
Inverter Power (E)	V	3	6	9	3	6	9
Speed (E)		**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**
Air flow **(E)**	m^3/h	2790	4235	5140	2750	4190	5090
Available pressure **(E)**	Pa	21	50	73	22	50	74
Cooling total emission **(E)**	kW	16,77	21,71	24,1	20,08	26,91	30,34
Cooling sensible emission **(E)**	kW	12,72	17,59	20,09	14,26	20,13	23,2
Heating **(E)**	kW	23,2	30,58	34,54	22,98	30,38	34,35
Dp Cooling **(E)**	kPa	15,7	25,4	31,4	20,8	35,9	45,4
Dp Heating **(E)**	kPa	20,1	33,2	41,3	19,8	32,8	40,8
Fan **(E)**	W	110	343	661	115	352	678
Sound power outlet **(E)**	dB(A)	57	69	73	57	69	73
Sound power inlet + radiated **(E)**	dB(A)	60	71,5	75	60	71,5	75
Sound pressure outlet **(*)**	dB(A)	48	60	64	48	60	64
Sound pressure inlet + radiated **(*)**	dB(A)	51	63	66	51	63	66
Plenum code		9034280			9034280		
			(**)			**(**)**	

(E) = EUROVENT certified performance.
(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.
(**) = Models not covered by EUROVENT certification program.

Kit 230V

Main and auxiliary coil valve kit
(to be used only with QCV-MB2 control board and WM-T, WM-TQR, WM-AU and T-MB2 controls)

230 V, ON-OFF valve.

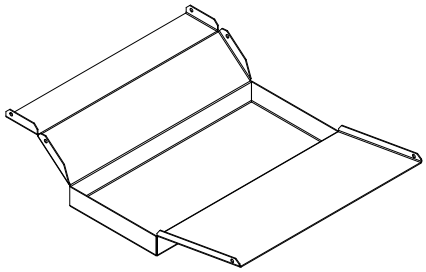
Kit 24V

Main and auxiliary coil valve kit
(to be used only with QCV-MB2 control board)

Valve with 3 points - 24 Volt actuator.

BCM

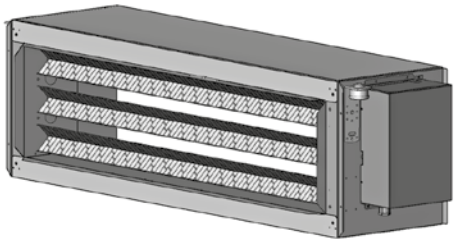
External auxiliary condensate collection tray



BEM

Electric coil

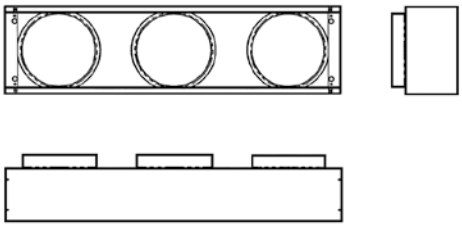
Consists of electric resistances and a security thermostat, which are inside a galvanized steel and insulated casing.



PMM

Intake/supply spigot plenum

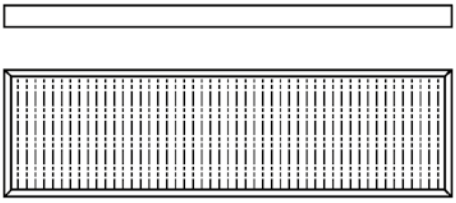
Intake/supply spigot plenum with 3 spigots (Sizes 1 - 2 - 3) or 4 spigots (Sizes 4 - 5 - 6).



SFM

ePM$_{10}$ 50% - G4 class synthetic filter

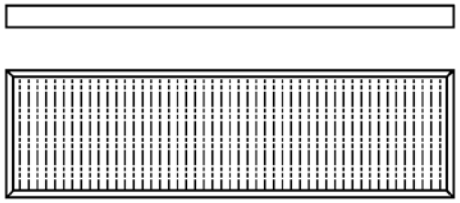
The filter is a washable synthetic fibre, flame-proof according to Class F1 DIN 53438. Compliant with: EN 16890. The filter is supplied as an accessory and must be fitted on the unit on site in place of the standard filter.



SFM-F6

ePM$_{10}$ 70% - F6 class Synthetic Filter
(for size 6 only)

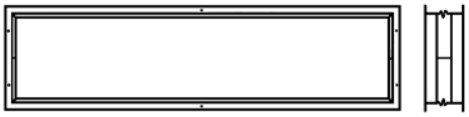
High efficiency compact filter in glass microfiber paper. Compliant with: EN 16890.



GAV

Antivibrating connection

Intake/supply antivibrating connection, made of two galvanized frames and a PVC flexible connection.



Electronic wall controls

WM-AU	Automatic speed control with electronic thermostat and summer/winter switch (to be used with UPOM-AU or UPO-AU only)
T-MB2	Wall control with LCD color display and WiFi (to be used with UPOM-AU or UPO-AU only)
UPOM-AU	Power unit for WM-AU and T-MB2 remote controls, fitted on the unit
UPO-AU	Power unit for WM-AU and T-MB2 remote controls, not fitted on the unit

Electronic controls for MB boards

QCV-MB2	MB control panel version (T-MB2 wall control included)
PSM-DI	PSM-DI multifunction control panel (to be used with QCV-MB2 control panel only)
T-DI	T-DI touch screen multifunction control panel (to be used with QCV-MB2 control panel only)
SabWeb	Web gateway for Sabiana Cloud (to be used with QCV-MB2 control panel only)

Sabianet management system for a network of fan coils	
Sabianet	Sabianet (to be used with QCV-MB2 control panel only)
Router-S	Router for Sabianet (default) or for BMS systems not provided by Sabiana (to be used with QCV-MB2 control panel only)
SIOS	Relay output board for Sabianet (to be used with QCV-MB2 control panel only)

NOTE: for more information about Controls please see the dedicated pages.

Carisma Floor CFP-ECM

Trench Convector Unit

Cooling and Heating

Carisma Floor CFP-ECM trench convectors represent a combination of innovative aesthetics and functionality in an air conditioning system.
They are designed to **efficiently heat, cool** and **ventilate** buildings with large windows or doors.
The air flow skims the window in such a way that the units can be placed where people leave. In doing so the design flexibility is increased.

The wide range of models includes **solutions which can be customised** depending on architectural requirements with diffusion grids in a variety of materials and colours.
The standard lengths available are 7, in 2 or 4 pipe versions. It is possible to adapt the thermal and sound performances to every design requirements, thanks to the innovative fan coil group modularity.
Several combinations are available: out of standard lengths of 50 mm pitch included

All the units are supplied with low energy consumption electronic motors.
A large variety of control and regulation accessories is available.
Floor trench convectors are used inside **private homes, on verandas, in public offices and buildings and in exhibition and commercial areas**.

CFP-ECM 130-330

CFP-ECM 175-350

Walkable **floor casing**, in galvanised steel sheet, coated with Anthracite grey (RAL 7016) powder paint, with external height adjustable system preassembled with an antivibrating device. Condensate collection tray integrated in floor casing, including two frontal connections along the drain side Ø15 mm.

Coil consisting of copper pipes and aluminium fins, painted Anthracite grey (RAL 7016) and housed, with acoustic decoupling, in transversal galvanised and painted steel frame. Euroconus connection, front or lateral side, with connection nut (int. thread. 3/4") and air venting.

Tangential fan, with protective cover, 24V EC motors freely adjustable (0 – 10 V) pre-wired and ready for connection.

Aluminium roll-up grid consisting of stable profiles, anodised in natural colours, with 20 x 6 mm slats.
Grid with overall height of 20 mm and free 70% transversal section, inserted in floor casing and acoustically insulated by rubber gaskets. Perimeter listel with finish similar to the cover grid (except for the wooden grids).

Mounting protective wooden cover with a protective profile of the perimeter listels to protect the fan coils during installation.

The Carisma CFP-ECM units are supplied without regulation board (accessory available in the "Controls and Accessories" section).

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CFP-ECM 2T version

Standard versions
7 Lengths with width: 330 mm and height 130 mm: 900 -1200 - 1400 - 1700 -2000 - 2500 - 3000
7 Lengths with width:350 mm and height 175 mm: 1000 - 1200 - 1400 - 1700 - 2000 - 2500 - 3000
Special lengths on request (50 mm pitch)
Aluminium roll-up grid.

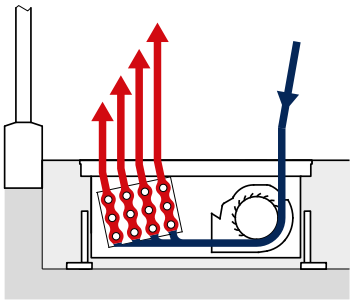
Identifications and models

Dimensions			Model
Casing Length L (mm)	Casing Height H (mm)	Casing Width T (mm)	
900	130	330	**CFP-ECM 2T 900-130-330**
1000	175	350	**CFP-ECM 2T 1000-175-350**
1200	130	330	**CFP-ECM 2T 1200-130-330**
	175	350	**CFP-ECM 2T 1200-175-350**
1400	130	330	**CFP-ECM 2T 1400-130-330**
	175	350	**CFP-ECM 2T 1400-175-350**
1700	130	330	**CFP-ECM 2T 1700-130-330**
	175	350	**CFP-ECM 2T 1700-175-350**
2000	130	330	**CFP-ECM 2T 2000-130-330**
	175	350	**CFP-ECM 2T 2000-175-350**
2500	130	330	**CFP-ECM 2T 2500-130-330**
	175	350	**CFP-ECM 2T 2500-175-350**
3000	130	330	**CFP-ECM 2T 3000-130-330**
	175	350	**CFP-ECM 2T 3000-175-350**

Operating principle

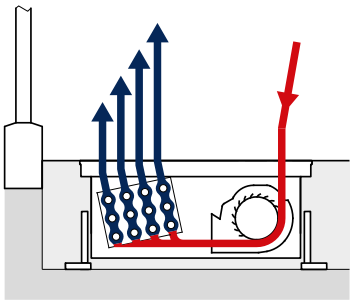
Forced heating convection

The cold air which skims the windows is suctioned and heated by the coil.
The heated air rises, creating a curtain.



Forced cooling convection

Installation in front of the window surfaces efficiently contrasts the diffusion of heat due to solar radiation.



Version CFP-ECM 4T

Standard versions
7 Lengths with width: 330 mm and height 130 mm: 900 -1200 - 1400 - 1700 -2000 - 2500 - 3000
7 Lengths with width:350 mm and height 175 mm: 1000 - 1200 - 1400 - 1700 - 2000 - 2500 - 3000
Special lengths on request (50 mm pitch)
Aluminium roll-up grid.

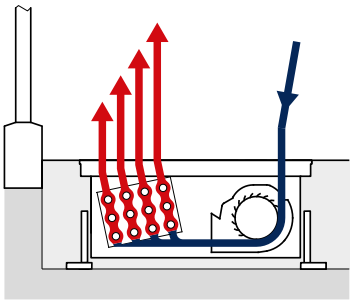
Identifications and models

Dimensions			Model
Casing Length L (mm)	Casing Height H (mm)	Casing Width T (mm)	
900	130	330	**CFP-ECM 4T 900-130-330**
1000	175	350	**CFP-ECM 4T 1000-175-350**
1200	130	330	**CFP-ECM 4T 1200-130-330**
	175	350	**CFP-ECM 4T 1200-175-350**
1400	130	330	**CFP-ECM 4T 1400-130-330**
	175	350	**CFP-ECM 4T 1400-175-350**
1700	130	330	**CFP-ECM 4T 1700-130-330**
	175	350	**CFP-ECM 4T 1700-175-350**
2000	130	330	**CFP-ECM 4T 2000-130-330**
	175	350	**CFP-ECM 4T 2000-175-350**
2500	130	330	**CFP-ECM 4T 2500-130-330**
	175	350	**CFP-ECM 4T 2500-175-350**
3000	130	330	**CFP-ECM 4T 3000-130-330**
	175	350	**CFP-ECM 4T 3000-175-350**

Operating principle

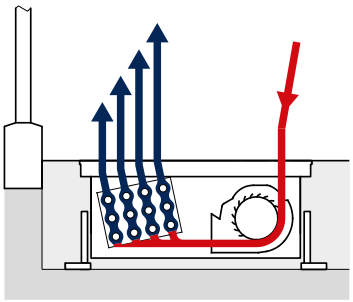
Forced heating convection

The cold air which skims the windows is suctioned and heated by the coil.
The heated air rises, creating a curtain.



Forced cooling convection

Installation in front of the window surfaces efficiently contrasts the diffusion of heat due to solar radiation.



CFP-ECM 2T version

Casing length 900 mm
Casing height 130 mm

2 pipe system.
The rated thermal emissions are in conformity with the 16430 Directive and referred to the following operating conditions:

COOLING
Entering air temperature: +27°C d.b.
R.H.: 50 %

Model			CFP-ECM 2T 900-130-330			
Casing length **L**		mm	**900**			
Casing width **T**		mm	**330**			
Fan motor drive signal EC		V	3	5	7	10
Air flow **QV**		m^3/h	80	143	193	229
Cooling: ΔTm 17,5 K – 7/12 °C	Total emission	W	301	766	1039	1204
	Sensible emission	W	199	517	705	830
Cooling: ΔTm 12,5 K – 12/17 °C	Total emission	W	177	357	515	651
	Sensible emission	W	164	357	515	651
Cooling: ΔTm 10,0 K – 16/18 °C	Total emission	W	145	283	407	507
	Sensible emission	W	145	283	407	507
Sound power L_w		dB(A)	29	36	47	57
Sound pressure L_p **(*)**		dB(A)	20	27	38	48
Weight **M**		kg	17,33			

HEATING
Entering air temperature: +20°C

Model		CFP-ECM 2T 900-130-330			
Casing length **L**	mm	**900**			
Casing width **T**	mm	**330**			
Fan motor drive signal EC	V	3	5	7	10
Air flow **QV**	m^3/h	80	143	193	229
Heating: ΔTm 50,0 K – 75/65 °C	W	899	1588	2278	3024
Heating: ΔTm 30,0 K – 55/45 °C	W	536	947	1358	1804
Heating: ΔTm 22,5 K – 45/40°C	W	404	714	1024	1360
Sound power L_w	dB(A)	29	36	47	57
Sound pressure L_p **(*)**	dB(A)	20	27	38	48
Weight **M**	kg	17,33			

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

CFP-ECM 2T version

Casing length 1000 mm
Casing height 175 mm

2 pipe system.
The rated thermal emissions are in conformity with the 16430 Directive and referred to the following operating conditions:

COOLING
Entering air temperature: +27°C d.b.
R.H.: 50 %

Model			CFP-ECM 2T 1000-175-350			
Casing length **L**		mm	**1000**			
Casing width **T**		mm	**350**			
Fan motor drive signal EC		V	3	5	7	10
Air flow **QV**		m^3/h	204	279	347	455
Cooling: ΔTm 17,5 K – 7/12 °C	Total emission	W	780	1088	1189	1510
	Sensible emission	W	568	842	1057	1510
Cooling: ΔTm 12,5 K – 12/17 °C	Total emission	W	454	621	806	1012
	Sensible emission	W	454	621	806	1012
Cooling: ΔTm 10,0 K – 16/18 °C	Total emission	W	404	617	825	1067
	Sensible emission	W	404	617	825	1067
Sound power L_w		dB(A)	38	43	49	58
Sound pressure L_p **(*)**		dB(A)	29	34	40	49
Weight **M**		kg	21,13			

HEATING
Entering air temperature: +20°C

Model		CFP-ECM 2T 1000-175-350			
Casing length **L**	mm	**1000**			
Casing width **T**	mm	**350**			
Fan motor drive signal EC	V	3	5	7	10
Air flow **QV**	m^3/h	204	279	347	455
Heating: ΔTm 50,0 K – 75/65 °C	W	2322	3165	3988	5187
Heating: ΔTm 30,0 K – 55/45 °C	W	1385	1887	2379	3093
Heating: ΔTm 22,5 K – 45/40°C	W	1044	1423	1793	2332
Sound power L_w	dB(A)	38	43	49	58
Sound pressure L_p **(*)**	dB(A)	29	34	40	49
Peso **M**	kg	21,13			

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec

CFP-ECM 2T version

Casing length 1200 mm
Casing height 130 mm / 175 mm

2 pipe system.
The rated thermal emissions are in conformity with the 16430 Directive and referred to the following operating conditions:

COOLING
Entering air temperature: +27°C d.b.
R.H.: 50 %

Model			CFP-ECM 2T 1200-130-330				CFP-ECM 2T 1200-175-350			
Casing length **L**		mm	**1200**				**1200**			
Casing width **T**		mm	**330**				**350**			
Fan motor drive signal EC		V	3	5	7	10	3	5	7	10
Air flow **QV**		m^3/h	125	231	323	373	264	370	460	607
Cooling: ΔTm 17,5 K – 7/12 °C	Total emission	W	468	1236	1737	1960	1010	1443	1579	2015
	Sensible emission	W	309	835	1178	1351	735	1116	1404	2015
Cooling: ΔTm 12,5 K – 12/17 °C	Total emission	W	276	576	860	1060	588	823	1071	1350
	Sensible emission	W	255	576	860	1060	588	823	1071	1350
Cooling: ΔTm 10,0 K – 16/18 °C	Total emission	W	226	456	681	826	523	818	1095	1424
	Sensible emission	W	226	456	681	826	523	818	1095	1424
Sound power L_w		dB(A)	30	38	49	56	35	41	48	57
Sound pressure L_p **(*)**		dB(A)	21	29	40	47	26	32	39	48
Weight **M**		kg	22,18				24,94			

HEATING
Entering air temperature: +20°C

Model		CFP-ECM 2T 1200-130-330				CFP-ECM 2T 1200-175-350			
Casing length **L**	mm	**1200**				**1200**			
Casing width **T**	mm	**330**				**350**			
Fan motor drive signal EC	V	3	5	7	10	3	5	7	10
Air flow **QV**	m^3/h	125	231	323	373	264	370	460	607
Heating: ΔTm 50,0 K – 75/65 °C	W	1561	2799	4006	4736	3190	4348	5479	7126
Heating: ΔTm 30,0 K – 55/45 °C	W	931	1669	2389	2825	1902	2593	3268	4250
Heating: ΔTm 22,5 K – 45/40°C	W	702	1259	1801	2130	1434	1955	2464	3204
Sound power L_w	dB(A)	30	38	49	56	35	41	48	57
Sound pressure L_p **(*)**	dB(A)	21	29	40	47	26	32	39	48
Weight **M**	kg	22,18				24,94			

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

CFP-ECM 2T version

Casing length 1400 mm
Casing height 130 mm / 175 mm

2 pipe system.
The rated thermal emissions are in conformity with the 16430 Directive and referred to the following operating conditions:

COOLING
Entering air temperature: +27°C d.b.
R.H.: 50 %

Model			CFP-ECM 2T 1400-130-330				CFP-ECM 2T 1400-175-350			
Casing length **L**		mm	**1400**				**1400**			
Casing width **T**		mm	**330**				**350**			
Fan motor drive signal EC		V	3	5	7	10	3	5	7	10
Air flow **QV**		m³/h	158	284	396	432	290	412	513	678
Cooling: ΔTm 17,5 K – 7/12 °C	Total emission	W	591	1520	2135	2268	1108	1605	1758	2250
	Sensible emission	W	390	1027	1448	1564	806	1242	1563	2250
Cooling: ΔTm 12,5 K – 12/17 °C	Total emission	W	348	708	1058	1227	645	915	1193	1508
	Sensible emission	W	322	708	1058	1227	645	915	1193	1508
Cooling: ΔTm 10,0 K – 16/18 °C	Total emission	W	285	561	837	956	573	911	1220	1591
	Sensible emission	W	285	561	837	956	573	911	1220	1591
Sound power L_w		dB(A)	32	39	50	56	33	40	47	57
Sound pressure L_p **(*)**		dB(A)	23	30	41	47	24	31	38	48
Weight **M**		kg	25,75				28,04			

HEATING
Entering air temperature: +20°C

Model		CFP-ECM 2T 1400-130-330				CFP-ECM 2T 1400-175-350			
Casing length **L**	mm	**1400**				**1400**			
Casing width **T**	mm	**330**				**350**			
Fan motor drive signal EC	V	3	5	7	10	3	5	7	10
Air flow **QV**	m³/h	158	284	396	432	290	412	513	678
Heating: ΔTm 50,0 K – 75/65 °C	W	1968	3529	4985	5655	3624	4939	6225	8095
Heating: ΔTm 30,0 K – 55/45 °C	W	1174	2105	2973	3373	2161	2946	3713	4828
Heating: ΔTm 22,5 K – 45/40°C	W	885	1587	2241	2543	1629	2221	2799	3640
Sound power L_w	dB(A)	32	39	50	56	33	40	47	57
Sound pressure L_p **(*)**	dB(A)	23	30	41	47	24	31	38	48
Weight **M**	kg	25,75				28,04			

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m³ room and a reverberation time of 0.5 sec.

CFP-ECM 2T version

Casing length 1700 mm
Casing height 130 mm / 175 mm

2 pipe system.
The rated thermal emissions are in conformity with the 16430 Directive and referred to the following operating conditions:

COOLING
Entering air temperature: +27°C d.b.
R.H.: 50 %

Model			CFP-ECM 2T 1700-130-330				CFP-ECM 2T 1700-175-350			
Casing length **L**		mm	**1700**				**1700**			
Casing width **T**		mm	**330**				**350**			
Fan motor drive signal EC		V	3	5	7	10	3	5	7	10
Air flow **QV**		m^3/h	191	353	471	489	382	560	699	930
Cooling: ΔTm 17,5 K – 7/12 °C	Total emission	W	717	1889	2536	2567	1460	2183	2396	3086
	Sensible emission	W	474	1276	1719	1770	1062	1689	2131	3086
Cooling: ΔTm 12,5 K – 12/17 °C	Total emission	W	423	880	1256	1389	849	1245	1625	2068
	Sensible emission	W	391	880	1256	1389	849	1245	1625	2068
Cooling: ΔTm 10,0 K – 16/18 °C	Total emission	W	346	697	994	1082	755	1238	1663	2181
	Sensible emission	W	346	697	994	1082	755	1238	1663	2181
Sound power L_w		dB(A)	32	39	50	55	40	46	52	63
Sound pressure L_p **(*)**		dB(A)	23	30	41	46	31	37	43	54
Weight **M**		kg	31				35,78			

HEATING
Entering air temperature: +20°C

Model		CFP-ECM 2T 1700-130-330				CFP-ECM 2T 1700-175-350			
Casing length **L**	mm	**1700**				**1700**			
Casing width **T**	mm	**330**				**350**			
Fan motor drive signal EC	V	3	5	7	10	3	5	7	10
Air flow **QV**	m^3/h	191	353	471	489	382	560	699	930
Heating: ΔTm 50,0 K – 75/65 °C	W	2485	4434	5970	6513	5143	7009	8834	11489
Heating: ΔTm 30,0 K – 55/45 °C	W	1482	2644	3560	3884	3067	4180	5269	6852
Heating: ΔTm 22,5 K – 45/40°C	W	1117	1994	2684	2929	2312	3152	3972	5166
Sound power L_w	dB(A)	32	39	50	55	40	46	52	63
Sound pressure L_p **(*)**	dB(A)	23	30	41	46	31	37	43	54
Weight **M**	kg	31				35,78			

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

CFP-ECM 2T version

Casing length 2000 mm
Casing height 130 mm / 175 mm

2 pipe system.
The rated thermal emissions are in conformity with the 16430 Directive and referred to the following operating conditions:

COOLING
Entering air temperature: +27°C d.b.
R.H.: 50 %

Model			CFP-ECM 2T 2000-130-330				CFP-ECM 2T 2000-175-350			
Casing length **L**		mm	**2000**				**2000**			
Casing width **T**		mm	**330**				**350**			
Fan motor drive signal EC		V	3	5	7	10	3	5	7	10
Air flow **QV**		m³/h	232	439	578	660	447	675	845	1130
Cooling: ΔTm 17,5 K – 7/12 °C	Total emission	W	871	2352	3112	3464	1707	2633	2896	3749
	Sensible emission	W	575	1588	2110	2388	1242	2036	2575	3749
Cooling: ΔTm 12,5 K – 12/17 °C	Total emission	W	513	1096	1541	1874	993	1501	1964	2512
	Sensible emission	W	474	1096	1541	1874	993	1501	1964	2512
Cooling: ΔTm 10,0 K – 16/18 °C	Total emission	W	420	868	1220	1460	883	1493	2009	2650
	Sensible emission	W	420	868	1220	1460	883	1493	2009	2650
Sound power L_w		dB(A)	32	40	51	58	38	44	51	61
Sound pressure L_p **(*)**		dB(A)	23	31	42	49	29	35	42	52
Weight **M**		kg	36,78				41,48			

HEATING
Entering air temperature: +20°C

Model		CFP-ECM 2T 2000-130-330				CFP-ECM 2T 2000-175-350			
Casing length **L**	mm	**2000**				**2000**			
Casing width **T**	mm	**330**				**350**			
Fan motor drive signal EC	V	3	5	7	10	3	5	7	10
Air flow **QV**	m³/h	232	439	578	660	447	675	845	1130
Heating: ΔTm 50,0 K – 75/65 °C	W	2980	5383	7727	9489	6445	8748	11071	14397
Heating: ΔTm 30,0 K – 55/45 °C	W	1777	3211	4608	5659	3844	5239	6603	8586
Heating: ΔTm 22,5 K – 45/40°C	W	1340	2421	3474	4267	2898	3950	4978	6474
Sound power L_w	dB(A)	32	40	51	58	38	44	51	61
Sound pressure L_p **(*)**	dB(A)	23	31	42	49	29	35	42	52
Weight **M**	kg	36,78				41,48			

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m³ room and a reverberation time of 0.5 sec.

CFP-ECM 2T version

Casing length 2500 mm
Casing height 130 mm / 175 mm

2 pipe system.
The rated thermal emissions are in conformity with the 16430 Directive and referred to the following operating conditions:

COOLING
Entering air temperature: +27°C d.b.
R.H.: 50 %

Model			CFP-ECM 2T 2500-130-330				CFP-ECM 2T 2500-175-350			
Casing length **L**		mm	**2500**				**2500**			
Casing width **T**		mm	**330**				**350**			
Fan motor drive signal EC		V	3	5	7	10	3	5	7	10
Air flow **QV**		m^3/h	305	580	739	770	602	917	1148	1538
Cooling: ΔTm 17,5 K – 7/12 °C	Total emission	W	1142	3107	3979	4042	2302	3576	3935	5102
	Sensible emission	W	755	2098	2698	2787	1675	2766	3499	5102
Cooling: ΔTm 12,5 K – 12/17 °C	Total emission	W	673	1448	1971	2186	1339	2039	2669	3419
	Sensible emission	W	622	1448	1971	2186	1339	2039	2669	3419
Cooling: ΔTm 10,0 K – 16/18 °C	Total emission	W	551	1146	1560	1703	1191	2029	2730	3607
	Sensible emission	W	551	1146	1560	1703	1191	2029	2730	3607
Sound power L_w		dB(A)	33	41	52	58	39	45	51	61
Sound pressure L_p **(*)**		dB(A)	24	32	43	49	30	36	42	52
Weight **M**		kg	45,63				53,11			

HEATING
Entering air temperature: +20°C

Model		CFP-ECM 2T 2500-130-330				CFP-ECM 2T 2500-175-350			
Casing length **L**	mm	**2500**				**2500**			
Casing width **T**	mm	**330**				**350**			
Fan motor drive signal EC	V	3	5	7	10	3	5	7	10
Air flow **QV**	m^3/h	305	580	739	770	602	917	1148	1538
Heating: ΔTm 50,0 K – 75/65 °C	W	3910	7075	9859	11237	8832	12037	15171	19729
Heating: ΔTm 30,0 K – 55/45 °C	W	2332	4219	5880	6702	5267	7179	9048	11766
Heating: ΔTm 22,5 K – 45/40°C	W	1758	3181	4433	5063	3971	5412	6822	8871
Sound power L_w	dB(A)	33	41	52	58	39	45	51	61
Sound pressure L_p **(*)**	dB(A)	24	32	43	49	30	36	42	52
Weight **M**	kg	45,63				53,11			

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

CFP-ECM 2T version

Casing length 3000 mm
Casing height 130 mm / 175 mm

2 pipe system.
The rated thermal emissions are in conformity with the 16430 Directive and referred to the following operating conditions:

COOLING
Entering air temperature: +27°C d.b.
R.H.: 50 %

Model			CFP-ECM 2T 3000-130-330				CFP-ECM 2T 3000-175-350			
Casing length **L**		mm	**3000**				**3000**			
Casing width **T**		mm	**330**				**350**			
Fan motor drive signal EC		V	3	5	7	10	3	5	7	10
Air flow **QV**		m³/h	365	693	810	855	751	1143	1430	1916
Cooling: ΔTm 17,5 K – 7/12 °C	Total emission	W	1370	3710	4488	4604	2867	4454	4902	6355
	Sensible emission	W	905	2506	3094	3122	2087	3446	4359	6355
Cooling: ΔTm 12,5 K – 12/17 °C	Total emission	W	807	1729	2281	2427	1668	2540	3325	4259
	Sensible emission	W	746	1729	2281	2427	1668	2540	3325	4259
Cooling: ΔTm 10,0 K – 16/18 °C	Total emission	W	661	1369	1804	1891	1483	2527	3401	4493
	Sensible emission	W	661	1369	1804	1891	1483	2527	3401	4493
Sound power L_w		dB(A)	33	41	52	57	36	42	49	60
Sound pressure L_p **(*)**		dB(A)	24	32	43	48	27	33	40	51
Weight **M**		kg	53,74				62,6			

HEATING
Entering air temperature: +20°C

Model		CFP-ECM 2T 3000-130-330				CFP-ECM 2T 3000-175-350			
Casing length **L**	mm	**3000**				**3000**			
Casing width **T**	mm	**330**				**350**			
Fan motor drive signal EC	V	3	5	7	10	3	5	7	10
Air flow **QV**	m³/h	365	693	810	855	751	1143	1430	1916
Heating: ΔTm 50,0 K – 75/65 °C	W	4553	8242	11158	12190	11002	14995	18898	24577
Heating: ΔTm 30,0 K – 55/45 °C	W	2715	4915	6655	7270	6561	8943	11271	14648
Heating: ΔTm 22,5 K – 45/40°C	W	2047	3706	5017	5481	4947	6742	8498	11051
Sound power L_w	dB(A)	33	41	52	57	36	42	49	60
Sound pressure L_p **(*)**	dB(A)	24	32	43	48	27	33	40	51
Weight **M**	kg	53,74				62,6			

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m³ room and a reverberation time of 0.5 sec.

CFP-ECM 4T version

Casing length 900 mm
Casing height 130 mm

4 pipe system.
The rated thermal emissions are in conformity with the 16430 Directive and referred to the following operating conditions:

COOLING
Entering air temperature: +27°C d.b.
R.H.: 50 %

Model			CFP-ECM 4T 900-130-330			
Casing length **L**		mm	**900**			
Casing width **T**		mm	**330**			
Fan motor drive signal EC		V	3	5	7	10
Air flow **QV**		m^3/h	68	113	149	171
Cooling: ΔTm 17,5 K – 7/12 °C	Total emission	W	255	607	804	900
	Sensible emission	W	169	410	545	620
Cooling: ΔTm 12,5 K – 12/17 °C	Total emission	W	150	283	398	487
	Sensible emission	W	139	283	398	487
Cooling: ΔTm 10,0 K – 16/18 °C	Total emission	W	123	224	315	379
	Sensible emission	W	123	224	315	379
Sound power L_w		dB(A)	29	36	47	57
Sound pressure L_p **(*)**		dB(A)	20	27	38	48
Weight **M**		kg	16,76			

HEATING
Entering air temperature: +20°C

Model		CFP-ECM 4T 900-130-330			
Casing length **L**	mm	**900**			
Casing width **T**	mm	**330**			
Fan motor drive signal EC	V	3	5	7	10
Air flow **QV**	m^3/h	68	113	149	171
Heating: ΔTm 50,0 K – 75/65 °C	W	664	1137	1580	1999
Heating: ΔTm 30,0 K – 55/45 °C	W	396	678	942	1192
Heating: ΔTm 22,5 K – 45/40°C	W	298	511	710	899
Sound power L_w	dB(A)	29	36	47	57
Sound pressure L_p **(*)**	dB(A)	20	27	38	48
Weight **M**	kg	16,76			

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

CFP-ECM 4T version

Casing length 1000 mm
Casing height 175 mm

4 pipe system.
The rated thermal emissions are in conformity with the 16430 Directive and referred to the following operating conditions:

COOLING
Entering air temperature: +27°C d.b.
R.H.: 50 %

Model			CFP-ECM 4T 1000-175-350			
Casing length **L**		mm	**1000**			
Casing width **T**		mm	**350**			
Fan motor drive signal EC		V	3	5	7	10
Air flow **QV**		m^3/h	161	216	265	342
Cooling: ΔTm 17,5 K – 7/12 °C	Total emission	W	617	842	909	1133
	Sensible emission	W	449	651	808	1133
Cooling: ΔTm 12,5 K – 12/17 °C	Total emission	W	359	480	616	759
	Sensible emission	W	359	480	616	759
Cooling: ΔTm 10,0 K – 16/18 °C	Total emission	W	319	477	630	801
	Sensible emission	W	319	477	630	801
Sound power L_w		dB(A)	40	44	50	59
Sound pressure L_p **(*)**		dB(A)	31	35	41	50
Weight **M**		kg	20,15			

HEATING
Entering air temperature: +20°C

Model		CFP-ECM 4T 1000-175-350			
Casing length **L**	mm	**1000**			
Casing width **T**	mm	**350**			
Fan motor drive signal EC	V	3	5	7	10
Air flow **QV**	m^3/h	161	216	265	342
Heating: ΔTm 50,0 K – 75/65 °C	W	1529	2984	2627	3416
Heating: ΔTm 30,0 K – 55/45 °C	W	912	1243	1567	2037
Heating: ΔTm 22,5 K – 45/40°C	W	688	937	1181	1536
Sound power L_w	dB(A)	40	44	50	59
Sound pressure L_p **(*)**	dB(A)	31	35	41	50
Weight **M**	kg	20,15			

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

CFP-ECM 4T version

Casing length 1200 mm
Casing height 130 mm / 175 mm

4 pipe system.
The rated thermal emissions are in conformity with the 16430 Directive and referred to the following operating conditions:

COOLING
Entering air temperature: +27°C d.b.
R.H.: 50 %

Model			CFP-ECM 4T 1200-130-330				CFP-ECM 4T 1200-175-350			
Casing length **L**		mm	**1200**				**1200**			
Casing width **T**		mm	**330**				**350**			
Fan motor drive signal EC		V	3	5	7	10	3	5	7	10
Air flow **QV**		m^3/h	103	184	250	279	227	311	382	495
Cooling: ΔTm 17,5 K – 7/12 °C	Total emission	W	386	987	1346	1465	868	1212	1311	1642
	Sensible emission	W	255	667	913	1010	632	937	1166	1642
Cooling: ΔTm 12,5 K – 12/17 °C	Total emission	W	228	460	667	792	505	691	889	1101
	Sensible emission	W	210	460	667	792	505	691	889	1101
Cooling: ΔTm 10,0 K – 16/18 °C	Total emission	W	186	364	528	617	449	687	910	1161
	Sensible emission	W	186	364	528	617	449	687	910	1161
Sound power L_w		dB(A)	30	38	49	56	37	42	48	58
Sound pressure L_p **(*)**		dB(A)	21	29	40	47	28	33	39	49
Weight **M**		kg	21,1				23,96			

HEATING
Entering air temperature: +20°C

Model		CFP-ECM 4T 1200-130-330				CFP-ECM 4T 1200-175-350			
Casing length **L**	mm	**1200**				**1200**			
Casing width **T**	mm	**330**				**350**			
Fan motor drive signal EC	V	3	5	7	10	3	5	7	10
Air flow **QV**	m^3/h	103	184	250	279	227	311	382	495
Heating: ΔTm 50,0 K – 75/65 °C	W	1131	1974	2761	3355	2232	3042	3834	4987
Heating: ΔTm 30,0 K – 55/45 °C	W	675	1177	1647	2001	1331	1814	2287	2974
Heating: ΔTm 22,5 K – 45/40°C	W	509	888	1241	1508	1004	1368	1724	2242
Sound power L_w	dB(A)	30	38	49	56	37	42	48	58
Sound pressure L_p **(*)**	dB(A)	21	29	40	47	28	33	39	49
Weight **M**	kg	21,1				23,96			

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

CFP-ECM 4T version

Casing length 1400 mm
Casing height 130 mm / 175 mm

4 pipe system.
The rated thermal emissions are in conformity with the 16430 Directive and referred to the following operating conditions:

COOLING
Entering air temperature: +27°C d.b.
R.H.: 50 %

Model			CFP-ECM 4T 1400-130-330				CFP-ECM 4T 1400-175-350			
Casing length **L**		mm	**1400**				**1400**			
Casing width **T**		mm	**330**				**350**			
Fan motor drive signal EC		V	3	5	7	10	3	5	7	10
Air flow **QV**		m³/h	132	236	323	362	258	357	440	571
Cooling: ΔTm 17,5 K – 7/12 °C	Total emission	W	495	1266	1739	1898	985	1392	1508	1894
	Sensible emission	W	327	855	1179	1309	717	1077	1341	1894
Cooling: ΔTm 12,5 K – 12/17 °C	Total emission	W	291	590	861	1027	573	794	1023	1269
	Sensible emission	W	269	590	861	1027	573	794	1023	1269
Cooling: ΔTm 10,0 K – 16/18 °C	Total emission	W	239	467	681	800	510	790	1046	1339
	Sensible emission	W	239	467	681	800	510	790	1046	1339
Sound power L_w		dB(A)	30	38	49	56	35	41	48	57
Sound pressure L_p **(*)**		dB(A)	21	29	40	47	26	32	39	48
Weight **M**		kg	24,41				27,05			

HEATING
Entering air temperature: +20°C

Model		CFP-ECM 4T 1400-130-330				CFP-ECM 4T 1400-175-350			
Casing length **L**	mm	**1400**				**1400**			
Casing width **T**	mm	**330**				**350**			
Fan motor drive signal EC	V	3	5	7	10	3	5	7	10
Air flow **QV**	m³/h	132	236	323	362	258	357	440	571
Heating: ΔTm 50,0 K – 75/65 °C	W	1491	2616	3649	4009	2584	3521	4438	5772
Heating: ΔTm 30,0 K – 55/45 °C	W	890	1560	2176	2391	1541	2100	2647	3442
Heating: ΔTm 22,5 K – 45/40°C	W	671	1176	1641	1803	1162	1583	1996	2595
Sound power L_w	dB(A)	30	38	49	56	35	41	48	57
Sound pressure L_p **(*)**	dB(A)	21	29	40	47	26	32	39	48
Weight **M**	kg	24,41				27,05			

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m³ room and a reverberation time of 0.5 sec.

CFP-ECM 4T version

Casing length 1700 mm
Casing height 130 mm / 175 mm

4 pipe system.
The rated thermal emissions are in conformity with the 16430 Directive and referred to the following operating conditions:

COOLING
Entering air temperature: +27°C d.b.
R.H.: 50 %

Model			CFP-ECM 4T 1700-130-330				CFP-ECM 4T 1700-175-350			
Casing length **L**		mm	**1700**				**1700**			
Casing width **T**		mm	**330**				**350**			
Fan motor drive signal EC		V	3	5	7	10	3	5	7	10
Air flow **QV**		m^3/h	179	323	432	442	360	515	625	830
Cooling: ΔTm 17,5 K – 7/12 °C	Total emission	W	673	1729	2324	2321	1375	2007	2178	2754
	Sensible emission	W	445	1168	1576	1600	1001	1552	1937	2754
Cooling: ΔTm 12,5 K – 12/17 °C	Total emission	W	396	806	1151	1256	800	1144	1478	1846
	Sensible emission	W	366	806	1151	1256	800	1144	1478	1846
Cooling: ΔTm 10,0 K – 16/18 °C	Total emission	W	324	638	911	978	711	1138	1511	1947
	Sensible emission	W	324	638	911	978	711	1138	1511	1947
Sound power L_w		dB(A)	32	39	50	55	41	47	53	63
Sound pressure L_p **(*)**		dB(A)	23	30	41	46	32	38	44	54
Weight **M**		kg	30,46				34,8			

HEATING
Entering air temperature: +20°C

Model		CFP-ECM 4T 1700-130-330				CFP-ECM 4T 1700-175-350			
Casing length **L**	mm	**1700**				**1700**			
Casing width **T**	mm	**330**				**350**			
Fan motor drive signal EC	V	3	5	7	10	3	5	7	10
Air flow **QV**	m^3/h	179	323	432	442	360	515	625	830
Heating: ΔTm 50,0 K – 75/65 °C	W	2079	3655	4890	5247	3767	5134	6471	8415
Heating: ΔTm 30,0 K – 55/45 °C	W	1240	2180	2917	3129	2247	3062	3859	5019
Heating: ΔTm 22,5 K – 45/40°C	W	935	1643	2199	2359	1694	2309	2910	3784
Sound power L_w	dB(A)	32	39	50	55	41	47	53	63
Sound pressure L_p **(*)**	dB(A)	23	30	41	46	32	38	44	54
Weight **M**	kg	30,46				34,8			

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

CFP-ECM 4T version

Casing length 2000 mm
Casing height 130 mm / 175 mm

4 pipe system.
The rated thermal emissions are in conformity with the 16430 Directive and referred to the following operating conditions:

COOLING
Entering air temperature: +27°C d.b.
R.H.: 50 %

Model			CFP-ECM 4T 2000-130-330				CFP-ECM 4T 2000-175-350			
Casing length **L**		mm	**2000**				**2000**			
Casing width **T**		mm	**330**				**350**			
Fan motor drive signal EC		V	3	5	7	10	3	5	7	10
Air flow **QV**		m³/h	211	391	519	613	422	634	793	1050
Cooling: ΔTm 17,5 K – 7/12 °C	Total emission	W	792	2096	2797	3217	1613	2473	2719	3482
	Sensible emission	W	523	1416	1897	2218	1174	1913	2418	3482
Cooling: ΔTm 12,5 K – 12/17 °C	Total emission	W	467	977	1386	1740	939	1410	1844	2333
	Sensible emission	W	431	977	1386	1740	939	1410	1844	2333
Cooling: ΔTm 10,0 K – 16/18 °C	Total emission	W	382	773	1096	1355	835	1403	1886	2461
	Sensible emission	W	382	773	1096	1355	835	1403	1886	2461
Sound power L_w		dB(A)	32	40	51	59	39	45	51	62
Sound pressure L_p **(*)**		dB(A)	23	31	42	50	30	36	42	53
Weight **M**		kg	35,7				40,5			

HEATING
Entering air temperature: +20°C

Model		CFP-ECM 4T 2000-130-330				CFP-ECM 4T 2000-175-350			
Casing length **L**	mm	**2000**				**2000**			
Casing width **T**	mm	**330**				**350**			
Fan motor drive signal EC	V	3	5	7	10	3	5	7	10
Air flow **QV**	m³/h	211	391	519	613	422	634	793	1050
Heating: ΔTm 50,0 K – 75/65 °C	W	2407	4282	6071	7562	4809	6554	8260	10742
Heating: ΔTm 30,0 K – 55/45 °C	W	1435	2554	3621	4510	2868	3909	4926	6407
Heating: ΔTm 22,5 K – 45/40°C	W	1082	1926	2730	3400	2162	2947	3714	4830
Sound power L_w	dB(A)	32	40	51	59	39	45	51	62
Sound pressure L_p **(*)**	dB(A)	23	31	42	50	30	36	42	53
Weight **M**	kg	35,7				40,5			

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m³ room and a reverberation time of 0.5 sec.

CFP-ECM 4T version

Casing length 2500 mm
Casing height 130 mm / 175 mm

4 pipe system.
The rated thermal emissions are in conformity with the 16430 Directive and referred to the following operating conditions:

COOLING
Entering air temperature: +27°C d.b.
R.H.: 50 %

Model			CFP-ECM 4T 2500-130-330				CFP-ECM 4T 2500-175-350			
Casing length **L**		mm	**2500**				**2500**			
Casing width **T**		mm	**330**				**350**			
Fan motor drive signal EC		V	3	5	7	10	3	5	7	10
Air flow **QV**		m^3/h	284	539	697	738	530	806	1009	1351
Cooling: ΔTm 17,5 K – 7/12 °C	Total emission	W	1065	2888	3753	3872	2027	3143	3458	4482
	Sensible emission	W	704	1950	2545	2670	1475	2431	3075	4482
Cooling: ΔTm 12,5 K – 12/17 °C	Total emission	W	628	1346	1859	2094	1179	1792	2346	3003
	Sensible emission	W	580	1346	1859	2094	1179	1792	2346	3003
Cooling: ΔTm 10,0 K – 16/18 °C	Total emission	W	514	1065	1471	1631	1048	1783	2399	3168
	Sensible emission	W	514	1065	1471	1631	1048	1783	2399	3168
Sound power L_w		dB(A)	33	41	52	58	35	42	49	60
Sound pressure L_p **(*)**		dB(A)	24	32	43	49	26	33	40	51
Weight **M**		kg	44,56				49,04			

HEATING
Entering air temperature: +20°C

Model		CFP-ECM 4T 2500-130-330				CFP-ECM 4T 2500-175-350			
Casing length **L**	mm	**2500**				**2500**			
Casing width **T**	mm	**330**				**350**			
Fan motor drive signal EC	V	3	5	7	10	3	5	7	10
Air flow **QV**	m^3/h	284	539	697	738	530	806	1009	1351
Heating: ΔTm 50,0 K – 75/65 °C	W	3243	5847	8207	9425	6198	8447	10646	13844
Heating: ΔTm 30,0 K – 55/45 °C	W	1934	3487	4895	5621	3696	5038	6349	8257
Heating: ΔTm 22,5 K – 45/40°C	W	1458	2629	3690	4238	2787	3798	4787	6225
Sound power L_w	dB(A)	33	41	52	58	35	42	49	60
Sound pressure L_p **(*)**	dB(A)	24	32	43	49	26	33	40	51
Weight **M**	kg	44,56				49,04			

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

CFP-ECM 4T version

Casing length 3000 mm
Casing height 130 mm / 175 mm

4 pipe system.
The rated thermal emissions are in conformity with the 16430 Directive and referred to the following operating conditions:

COOLING
Entering air temperature: +27°C d.b.
R.H.: 50 %

Model			CFP-ECM 4T 3000-130-330				CFP-ECM 4T 3000-175-350			
Casing length **L**		mm	**3000**				**3000**			
Casing width **T**		mm	**330**				**350**			
Fan motor drive signal EC		V	3	5	7	10	3	5	7	10
Air flow **QV**		m³/h	365	693	810	855	721	1098	1373	1840
Cooling: ΔTm 17,5 K – 7/12 °C	Total emission	W	1370	3710	4488	4604	2754	4279	4708	6104
	Sensible emission	W	905	2506	3094	3122	2004	3310	4187	6104
Cooling: ΔTm 12,5 K – 12/17 °C	Total emission	W	807	1729	2281	2427	1602	2440	3194	4091
	Sensible emission	W	746	1729	2281	2427	1602	2440	3194	4091
Cooling: ΔTm 10,0 K – 16/18 °C	Total emission	W	661	1369	1804	1891	1425	2427	3266	4315
	Sensible emission	W	661	1369	1804	1891	1425	2427	3266	4315
Sound power L_w		dB(A)	33	41	52	57	36	43	49	60
Sound pressure L_p **(*)**		dB(A)	24	32	43	48	27	34	40	51
Weight **M**		kg	53,74				62,6			

HEATING
Entering air temperature: +20°C

Model		CFP-ECM 4T 3000-130-330				CFP-ECM 4T 3000-175-350			
Casing length **L**	mm	**3000**				**3000**			
Casing width **T**	mm	**330**				**350**			
Fan motor drive signal EC	V	3	5	7	10	3	5	7	10
Air flow **QV**	m³/h	365	693	810	855	721	1098	1373	1840
Heating: ΔTm 50,0 K – 75/65 °C	W	4007	7286	9908	10898	8349	11378	14341	18650
Heating: ΔTm 30,0 K – 55/45 °C	W	2390	4345	5909	6500	4979	6786	8553	11123
Heating: ΔTm 22,5 K – 45/40°C	W	1802	3276	4455	4900	3754	5116	6448	8386
Sound power L_w	dB(A)	33	41	52	57	36	43	49	60
Sound pressure L_p **(*)**	dB(A)	24	32	43	48	27	34	40	51
Weight **M**	kg	53,74				62,6			

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m³ room and a reverberation time of 0.5 sec.

Carisma Floor CSP-ECM

Trench Convector

for Heating only

Carisma Floor CSP-ECM trench convectors represent a combination of innovative aesthetics and functionality in an heating system.

They are designed to efficiently **heat and ventilate** buildings with large windows or doors.

The wide range of models includes **solutions which can be customised** depending on architectural requirements with diffusion grids in a variety of materials and colours.

All the units are supplied with low energy consumption electronic motors.

A large variety of control and regulation accessories is available.

Floor trench convectors are used **inside private homes, on verandas, in public offices and buildings and in exhibition and commercial areas**.

TECHNICAL CHARACTERISTICS

Walkable floor casing, in galvanised steel sheet, coated with Anthracite grey (RAL 7016) powder paint, with external height adjustable system preassembled with an antivibrating device.

Coil consisting of copper pipes and aluminium fins, painted Anthracite grey (RAL 7016) and housed, with acoustic decoupling, in transversal galvanised and painted steel frame. Frontal Euroconus connection with connection nut (int. thread ¾") and air venting.

Tangential fan, protective cover, 24V EC motors freely adjustable (0 – 10 V) pre-wired and ready for connection.

2 pipes

Aluminium roll-up grid consisting of stable profiles, anodised in natural colours, with 20 x 6 mm slats.
Grid with overall height of 20 mm and free 70% transversal section, inserted in floor casing and acoustically insulated by rubber gaskets. Perimeter listel with finish of cover grid.

Mounting cover with a black plastic **protective profile** of the perimeter listels to protect the fan coils during installation.

Standard models
2 models: 110 x 192 mm and 130 x 217 mm (Height H x Width T)
11 Lengths L: 1000, 1200, 1400, 1600, 1800, 2000, 2200, 2400, 2600, 2800 and 3000 mm.
Aluminium roll-up grid.

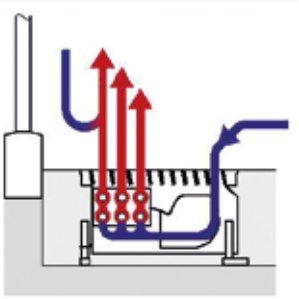
Identifications and models

Casing Lenght L	Casing Height H (mm) x Casing Width T (mm)	
(mm)	110 x 192	130 x 217
1000	CSP-ECM 1000-110-192	CSP-ECM 1000-130-217
1200	CSP-ECM 1200-110-192	CSP-ECM 1200-130-217
1400	CSP-ECM 1400-110-192	CSP-ECM 1400-130-217
1600	CSP-ECM 1600-110-192	CSP-ECM 1600-130-217
1800	CSP-ECM 1800-110-192	CSP-ECM 1800-130-217
2000	CSP-ECM 2000-110-192	CSP-ECM 2000-130-217
2200	CSP-ECM 2200-110-192	CSP-ECM 2200-130-217
2400	CSP-ECM 2400-110-192	CSP-ECM 2400-130-217
2600	CSP-ECM 2600-110-192	CSP-ECM 2600-130-217
2800	CSP-ECM 2800-110-192	CSP-ECM 2800-130-217
3000	CSP-ECM 3000-110-192	CSP-ECM 3000-130-217

Operating principle

Forced heating convection

The cold air is suctioned from the ambient and heated by the coil. The heated air rises, creating a shield to cold air among the window and the ambient.



2 pipe system. The rated thermal emissions are referred to the following operating conditions:
HEATING (winter mode)
Air temperature: +20°C

Casing lenght 1000 mm

Model		CSP-ECM 1000-110-192					CSP-ECM 1000-130-217				
Casing lenght **L**	mm	**110**					**130**				
Casing width **T**	mm	**192**					**217**				
Fan motor drive signal **EC**	V	0	3	5	8	10	0	3	5	8	10
Air flow **QV**	m^3/h	-	79	129	180	220	-	113	185	258	315
Heating: ΔTm 50,0 K – 75/65 °C	W	125	477	786	1065	1441	144	811	1195	1559	2049
Heating: ΔTm 30,0 K – 55/45 °C	W	59	284	469	635	859	68	484	713	930	1222
Heating: ΔTm 25,0 K –50/40°C	W	45	236	389	527	713	52	401	591	772	1014
Sound power L_w	dB(A)	-	< 28	29	38	50	-	< 28	33	44	53
Sound pressure L_p **(*)**	dB(A)	-	< 19	20	29	41	-	< 19	24	35	44
Weight **M**	kg	14,78					16,67				

Casing lenght 1200 mm

Model		CSP-ECM 1200-110-192					CSP-ECM 1200-130-217				
Casing lenght **L**	mm	**110**					**130**				
Casing width **T**	mm	**192**					**217**				
Fan motor drive signal **EC**	V	0	3	5	8	10	0	3	5	8	10
Air flow **QV**	m^3/h	-	105	174	242	295	-	138	226	316	385
Heating: ΔTm 50,0 K – 75/65 °C	W	162	625	1035	1395	1889	186	1132	1668	2145	2678
Heating: ΔTm 30,0 K – 55/45 °C	W	77	373	617	832	1127	88	675	995	1279	1597
Heating: ΔTm 25,0 K –50/40°C	W	58	309	512	690	935	67	560	826	1062	1325
Sound power L_w	dB(A)	-	< 28	32	40	52	-	< 28	35	46	55
Sound pressure L_p **(*)**	dB(A)	-	< 19	23	31	43	-	< 19	26	37	46
Weight **M**	kg	17,24					19,40				

Casing lenght 1400 mm

Model		CSP-ECM 1400-110-192					CSP-ECM 1400-130-217				
Casing lenght **L**	mm	**110**					**130**				
Casing width **T**	mm	**192**					**217**				
Fan motor drive signal **EC**	V	0	3	5	8	10	0	3	5	8	10
Air flow **QV**	m^3/h	-	130	215	299	365	-	155	256	357	435
Heating: ΔTm 50,0 K – 75/65 °C	W	200	848	1391	1901	2574	230	1456	2148	2798	3119
Heating: ΔTm 30,0 K – 55/45 °C	W	95	506	830	1134	1535	109	868	1281	1669	1860
Heating: ΔTm 25,0 K –50/40°C	W	72	420	688	941	1274	83	721	1063	1385	1544
Sound power L_w	dB(A)	-	< 28	32	41	53	-	< 28	36	46	55
Sound pressure L_p **(*)**	dB(A)	-	< 19	23	32	44	-	< 19	27	37	46
Weight **M**	kg	20,08					22,61				

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

2 pipe system. The rated thermal emissions are referred to the following operating conditions:
HEATING (winter mode)
Air temperature: +20°C

Casing lenght 1600 mm

Model		CSP-ECM 1600-110-192					CSP-ECM 1600-130-217				
Casing lenght **L**	mm	**110**					**130**				
Casing width **T**	mm	**192**					**217**				
Fan motor drive signal **EC**	V	0	3	5	8	10	0	3	5	8	10
Air flow **QV**	m^3/h	-	154	253	352	430	-	173	285	398	485
Heating: ΔTm 50,0 K – 75/65 °C	W	237	979	1597	2217	2935	273	1794	2647	3398	3761
Heating: ΔTm 30,0 K – 55/45 °C	W	112	584	952	1322	1750	129	1070	1579	2027	2243
Heating: ΔTm 25,0 K –50/40°C	W	85	485	790	1097	1453	98	888	1310	1682	1861
Sound power L_w	dB(A)	-	< 28	33	42	53	-	< 28	37	47	55
Sound pressure L_p **(*)**	dB(A)	-	< 19	24	33	44	-	< 19	28	38	46
Weight **M**	kg	22,71					25,62				

Casing lenght 1800 mm

Model		CSP-ECM 1800-110-192					CSP-ECM 1800-130-217				
Casing lenght **L**	mm	**110**					**130**				
Casing width **T**	mm	**192**					**217**				
Fan motor drive signal **EC**	V	0	3	5	8	10	0	3	5	8	10
Air flow **QV**	m^3/h	-	184	303	422	515	-	254	418	582	710
Heating: ΔTm 50,0 K – 75/65 °C	W	260	1198	1941	2627	3557	299	2045	3047	3961	5094
Heating: ΔTm 30,0 K – 55/45 °C	W	123	714	1158	1567	2121	141	1220	1817	2362	3038
Heating: ΔTm 25,0 K –50/40°C	W	94	593	961	1300	1760	108	1012	1508	1960	2521
Sound power L_w	dB(A)	-	< 28	34	44	54	-	< 28	37	48	56
Sound pressure L_p **(*)**	dB(A)	-	< 19	25	35	45	-	< 19	28	39	47
Weight **M**	kg	25,88					29,18				

Casing lenght 2000 mm

Model		CSP-ECM 2000-110-192					CSP-ECM 2000-130-217				
Casing lenght **L**	mm	**110**					**130**				
Casing width **T**	mm	**192**					**217**				
Fan motor drive signal **EC**	V	0	3	5	8	10	0	3	5	8	10
Air flow **QV**	m^3/h	-	211	347	484	590	-	275	453	631	770
Heating: ΔTm 50,0 K – 75/65 °C	W	290	1327	2159	2909	3941	334	2332	3475	4486	5619
Heating: ΔTm 30,0 K – 55/45 °C	W	137	791	1288	1735	2350	158	1391	2072	2675	3351
Heating: ΔTm 25,0 K –50/40°C	W	105	657	1069	1440	1950	120	1154	1720	2220	2781
Sound power L_w	dB(A)	-	< 28	34	44	55	-	< 28	38	49	56
Sound pressure L_p **(*)**	dB(A)	-	< 19	25	35	46	-	< 19	29	40	47
Weight **M**	kg	28,33					32,00				

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

2 pipe system. The rated thermal emissions are referred to the following operating conditions:
HEATING (winter mode)
Air temperature: +20°C

Casing lenght 2200 mm

Model		CSP-ECM 2200-110-192					CSP-ECM 2200-130-217				
Casing lenght **L**	mm	**110**					**130**				
Casing width **T**	mm	**192**					**217**				
Fan motor drive signal **EC**	V	0	3	5	8	10	0	3	5	8	10
Air flow **QV**	m^3/h	-	236	388	541	660	-	293	482	672	820
Heating: ΔTm 50,0 K – 75/65 °C	W	318	1544	2567	3462	4679	366	2579	3834	4984	5966
Heating: ΔTm 30,0 K – 55/45 °C	W	150	921	1531	2065	2791	173	1538	2287	2972	3558
Heating: ΔTm 25,0 K –50/40°C	W	115	764	1270	1713	2316	132	1276	1898	2467	2953
Sound power L_w	dB(A)	-	< 28	35	44	55	-	28	38	49	56
Sound pressure L_p **(*)**	dB(A)	-	< 19	26	35	46	-	19	29	40	47
Weight **M**	kg	31,25					35,30				

Casing lenght 2400 mm

Model		CSP-ECM 2400-110-192					CSP-ECM 2400-130-217				
Casing lenght **L**	mm	**110**					**130**				
Casing width **T**	mm	**192**					**217**				
Fan motor drive signal **EC**	V	0	3	5	8	10	0	3	5	8	10
Air flow **QV**	m^3/h	-	261	429	598	730	-	316	521	725	885
Heating: ΔTm 50,0 K – 75/65 °C	W	342	1669	2771	3743	5030	393	2802	4165	5375	6365
Heating: ΔTm 30,0 K – 55/45 °C	W	162	995	1653	2232	3000	186	1671	2484	3206	3796
Heating: ΔTm 25,0 K –50/40°C	W	123	826	1371	1852	2489	142	1387	2061	2660	3150
Sound power L_w	dB(A)	-	< 28	35	44	55	-	28	38	49	57
Sound pressure L_p **(*)**	dB(A)	-	< 19	26	35	46	-	19	29	40	48
Weight **M**	kg	33,75					38,17				

Casing lenght 2600 mm

Model		CSP-ECM 2600-110-192					CSP-ECM 2600-130-217				
Casing lenght **L**	mm	**110**					**130**				
Casing width **T**	mm	**192**					**217**				
Fan motor drive signal **EC**	V	0	3	5	8	10	0	3	5	8	10
Air flow **QV**	m^3/h	-	284	468	652	795	-	329	541	754	920
Heating: ΔTm 50,0 K – 75/65 °C	W	363	1877	3072	4177	5530	417	3016	4462	5771	6447
Heating: ΔTm 30,0 K – 55/45 °C	W	172	1119	1832	2491	3298	197	1799	2661	3442	3845
Heating: ΔTm 25,0 K –50/40°C	W	131	929	1520	2067	2737	150	1493	2208	2856	3191
Sound power L_w	dB(A)	-	28	36	45	56	-	28	39	49	57
Sound pressure L_p **(*)**	dB(A)	-	19	27	36	47	-	19	30	40	48
Weight **M**	kg	36,55					41,34				

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

2 pipe system. The rated thermal emissions are referred to the following operating conditions:
HEATING (winter mode)
Air temperature: +20°C

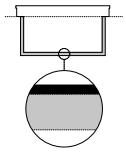
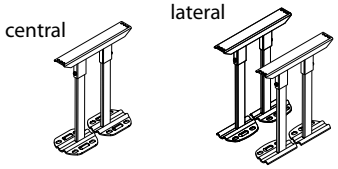
Casing lenght 2800 mm

Model		CSP-ECM 2800-110-192					CSP-ECM 2800-130-217				
Casing lenght **L**	mm	**110**					**130**				
Casing width **T**	mm	**192**					**217**				
Fan motor drive signal **EC**	V	0	3	5	8	10	0	3	5	8	10
Air flow **QV**	m^3/h	-	305	503	701	855	-	345	568	791	965
Heating: ΔTm 50,0 K – 75/65 °C	W	378	1978	3226	4444	5788	435	3209	4747	6095	6784
Heating: ΔTm 30,0 K – 55/45 °C	W	179	1180	1924	2650	3452	206	1914	2831	3635	4046
Heating: ΔTm 25,0 K –50/40°C	W	136	979	1597	2199	2865	157	1588	2349	3017	3358
Sound power L_w	dB(A)	-	28	37	45	56	-	29	39	50	57
Sound pressure L_p **(*)**	dB(A)	-	19	28	36	47	-	20	30	41	48
Weight **M**	kg	39,06					44,22				

Casing lenght 3000 mm

Model		CSP-ECM 3000-110-192					CSP-ECM 3000-130-217				
Casing lenght **L**	mm	**110**					**130**				
Casing width **T**	mm	**192**					**217**				
Fan motor drive signal **EC**	V	0	3	5	8	10	0	3	5	8	10
Air flow **QV**	m^3/h	-	320	526	734	895	-	355	585	816	995
Heating: ΔTm 50,0 K – 75/65 °C	W	387	2051	3346	4586	5936	445	3328	4923	6320	7008
Heating: ΔTm 30,0 K – 55/45 °C	W	183	1223	1996	2735	3540	210	1985	2936	3769	4180
Heating: ΔTm 25,0 K –50/40°C	W	140	1015	1656	2270	2938	160	1647	2436	3128	3468
Sound power L_w	dB(A)	-	28	37	46	56	-	29	39	50	57
Sound pressure L_p **(*)**	dB(A)	-	19	28	37	47	-	20	30	41	48
Weight **M**	kg	41,37					47,87				

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

VS-A1-A2-OF	**2 way ON-OFF valve** ON-OFF 2-way valve not fitted, with actuator 230V (to be used with KNX-CFP-ECM-B20 kit and MB board), frontal connections A1-A2	
VS-A3-A4-OF	**2 way ON-OFF valve (for CFP-ECM only)** ON-OFF 2-way valve not fitted, with actuator 230V (to be used with KNX-CFP-ECM-B20 kit and MB board), side connections A3-A4	
CVSG	**Empty casing** The range and minimum and special lengths of the casings vary for the different models. **Dimensions**: • Heights: 110, 130 mm • Widths: 192, 217, 330, 350 mm • Variable lengths: 200–3000 mm **Material**: galvanised steel painted Anthracite grey (RAL 7016 opaque) with natural anodised aluminium casing.	
TS	**Casing sound absorbtion lining** 4 mm sound absorbtion lining installed in the factory on the outer surface of the casing.	
FVM	**Air intake filter** Intake filter PPI 30 dark 3 mm thick.	
PC-FL	**Condensate pump (CFP-ECM only)** (fitted on the unit)	
ST-FL	**Central soil stand bracket (CFP-ECM only)**	
CST-FL	**Lateral soil stand brackets (CFP-ECM only)** (the couple)	

Top Grills

They are attractively shaped, solid and robust. There are pratically no limits to how they can be integrated into the architectural design of the room. It is possible to choose between various profile forms, materials, colours and surface finishings. The grills can be easily removed for cleaning and then returned to their original positions.

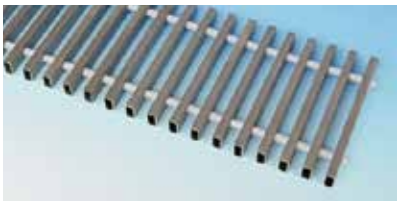
GAA **Flexible aluminium roll-up grille**

Dimension:
- Length up to 3000 mm
- Height: 20 mm
- Bar width: 6 mm
- Bar spacing: 14 mm
- Open cross-section: 70%

Anodised in natural or colour, powder-coated in RAL colours (Bronze, Dark Silver, Brass, Black).
Cut surfaces in aluminium colour if linear grille is in two pieces.
Aluminium profiles.

GAI **Stainless steel roll-up grille**

Dimension:
- Length up to 3000 mm
- Height: 20 mm
- Bar width: 10 mm
- Bar spacing: 16 mm
- Open cross-section: 60%



GLE **Wooden roll-up grille**

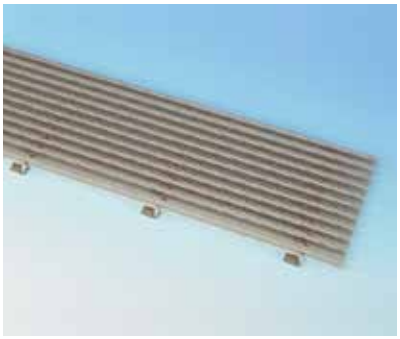
Dimension:
- Length up to 3000 mm
- Height: 20 mm
- Bar width: 12 mm
- Bar spacing: 16 mm
- Open cross-section: 55%

Light oak, ash and beech oiled versions.

GLA **Aluminium linear grille**

Dimension:
- Length up to 3000 mm
- Height: 20 mm
- Bar width: 6 mm
- Bar spacing: 10 mm
- Open cross-section: 60%

Anodised in natural or colour, powder-coated in RAL colours (Bronze, Dark Silver, Brass, Black).
Longitudinal profile bars are fixedly connected to aluminium angle profiles by means of a pressure process every 200-300 mm. Aluminium profiles.



Management system with MB board

MB-CFP-ECM-B20	**Regulation and control board, not fitted on the unit**	
T-MB2	**Wall control with LCD color display and WiFi** (to be used with MB-CFP-ECM-B20 board only)	
PSM-DI	**Multifunction control panel** (to be used with MB-CFP-ECM-B20 board only)	
T-DI	**Touch screen multifunction control panel** (to be used with MB-CFP-ECM-B20 board only)	
SabWeb	**Web gateway for Sabiana Cloud** (to be used with MB-CFP-ECM-B20 board only)	
T2	**T2 accessory for units with MB-CFP-ECM-B20 board, without valves** NTC probe (to be used as Change-over) to be coupled to MB-CFP-ECM-B20 board and to be placed on the water supply pipe.	

Sabianet	**Sabianet management system** For MB version only.	
Router-S	**Router for Sabianet** (default) or for BMS systems not provided by Sabiana.	
SIOS	**8 Relay output board for Sabianet**	

Controls for KNX systems

	KNX systems
WM-KNX	Wall control with electronic thermostat and summer/winter switch (to be used with KNX-CFP-ECM-B20 and PL mounting plate only)
KNX-CFP-ECM-B20	KNX-CFP-ECM-B20 power unit supplied with separate packaging
PL-503-B	Mounting plate for rectangular box
PL-QUA-B	Mounting plate for rectangular box

Angle models

Available with all models and all casing sizes.
The α angle can vary from 50° to 320°.
When placing the order, you must supply a detailed drawing or a shape.
Feasibility only after technical inspection.
The trench convector must be transportable.

Curved models

Minimum curvature radius R: 1000 mm.
When placing the order, you must supply a detailed drawing or a shape.
Feasibility only after technical inspection.
The trench convector must be transportable.

Models with column

Available with all models and all casing sizes.
When placing the order, you must supply a detailed drawing or a shape.
Feasibility only after technical inspection.
The trench convector must be transportable.

SkyStar SK

Cassette Fan Coil Unit with Asynchronous Motor

Innovating and beautiful design, **seven different sizes**, high control flexibility, easy maintenance: the **SkyStar chilled water Cassette** is the result of an extended technical and design development aimed at achieving the highest level in terms of performance, silent operation and control possibilities.

The air diffuser has an highly attractive aesthetical appearance, very innovative, and is also able to offer the best air distribution performance thanks to in-depth computer studies and laboratory tests.

The 4 smaller sizes are designed to fit into **600x600 mm false ceiling** standard modules. The 3 bigger sizes have a **dimension of 800x800 mm** which allows the best outcome in terms of quietness and of price/performance ratio for these high capacity models.

In addition to temperature and speed standard controls, **automatic** speed selection is also available.

More than one unit can be connected to a single control, and the unit control panel can be installed in a remote position that **facilitates** the maintenance operation.

All the SkyStar units can be supplied in **MB version**. This version allows a wide range of controls, including the infra-red remote control, which can manage one single unit or several units by using the **Modbus RTU - RS 485** communication protocol.

The units can be connected to the most common automatic building management systems.

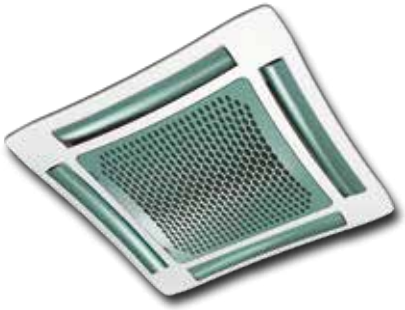
Air diffusers

Intake grid, frame and adjustable air distribution louvers on each side, made from ABS.

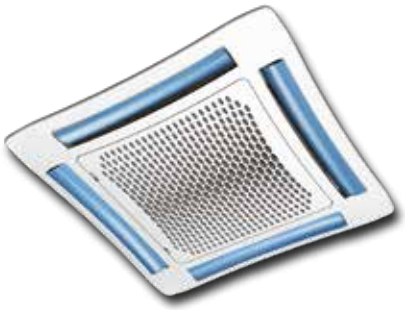
HTA version
white ABS, RAL 9003

HTB version
intake grid, frame and louvers in a colour of choice

HTC version
intake grid and louvers in a colour of choice, plus white ABS frame RAL 9003



HTD version
louvers in a colour of choice, while the grid and frame are made from ABS, RAL 9003



MD-600 / MD-800 version
metal diffuser painted in RAL 9003 white colour to perfectly fit into the false ceiling standard modules without overlapping parts

Casing: made of galvanized steel with internal thermal insulation with polyolefin (PO) foam (B-s2-d0 EN 13501-1) and external anti-condensate lining.

Control panel: made of an external metallic box with control electronic board and easily accessible terminal board.

Fan assembly: the fan assembly, which is mounted on anti-vibrating supports, is extremely silent.
The radial fan has been designed to optimise performance, using wing profile blades with a shape that reduces turbulence, increasing efficiency and reducing noise.
The single air inlet radial fan is connected to a 6 speed electric motor with single phase 230 V / 50 Hz supply, class B insulation and integrated Klixon thermal contact for motor protection.
The units are supplied with 3 standard speeds connected and it is possible to change them on site if necessary.
Coil: made of copper tubes with bonded aluminium fins for maximum transfer contact. The coils have 1, 2 or 3 rows for 2 pipe models and 2+1 rows for 4 pipe models (the heating row is on the inside part of the coil).

For 4 pipe systems two versions are available:

- **SK 04, SK 14, SK 24, SK 34, SK 44, SK 54, SK 64** supply an higher heating emission;
- **SK 26, SK 36, SK 56, SK 66** supply an higher cooling emission.

The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.

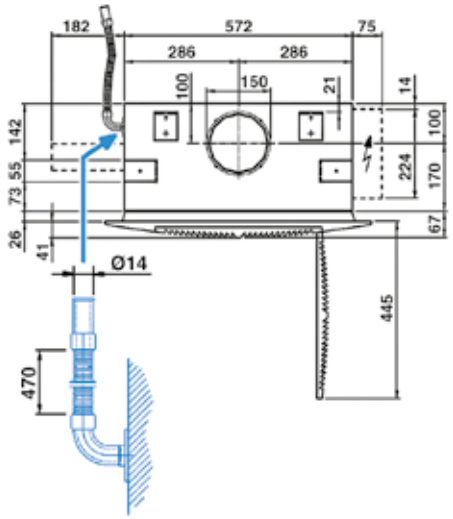
Condensate collection tray: high density ABS polystyrene foam condensate tray, shaped in order to optimize the air diffusion, fire retardant rating B1 to DIN 4102.

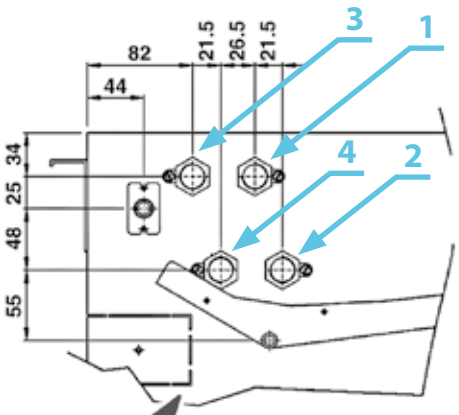
Air filter: synthetic washable filter, easily removable.

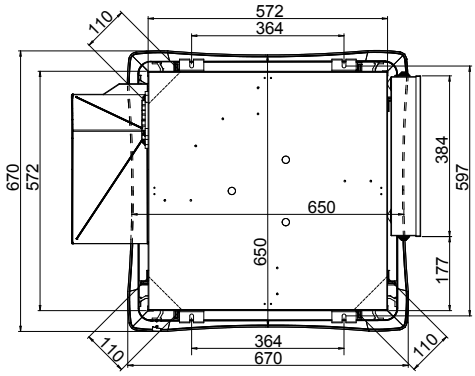
Condensate pump: float switch centrifugal pump with 650 mm of maximum head, built into the unit and wired to the control panel on the outside of the casing.

Valve set: two or three way valves for ON/OFF operation, with pipe mounting kit and thermostatic actuator.

SK 02-04 / SK 12-14 / SK 22-24-26 / SK 32-34-36
(Version 600 x 600)





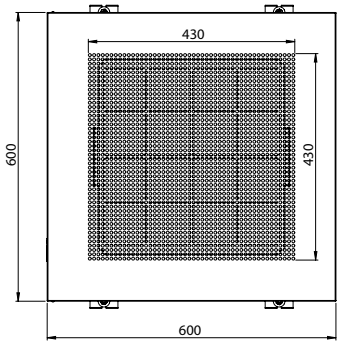


2 pipe units
3 Flow, heating/cooling 1/2"
4 Return, heating/cooling 1/2"

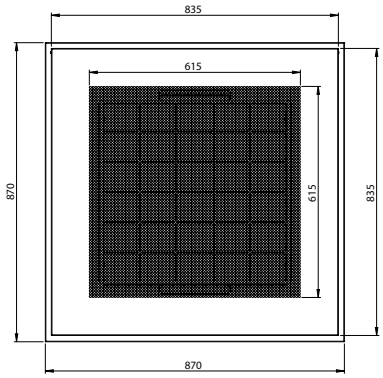
4 pipe units
1 Flow, heating 1/2"
2 Return, heating 1/2"
3 Flow, cooling 1/2"
4 Return, cooling 1/2"

Metal diffuser

MD-600



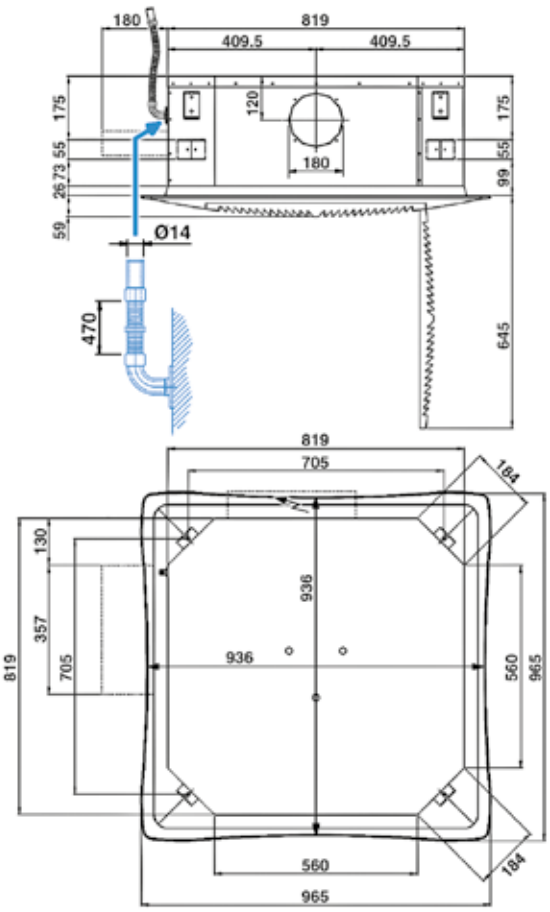
MD-800

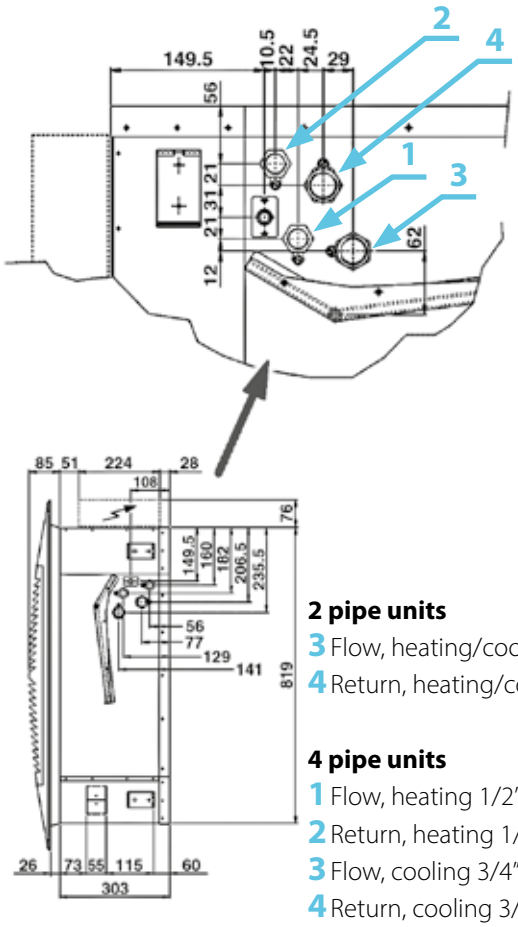


Model	Code
MD-600	9079420
MD-800	9079417

Model	Unit		Diffuser		Packed unit dimensions (mm)			
	Weight packed unit	Weight unpacked unit	Weight packed unit	Weight unpacked unit				
	kg	kg	kg	kg	A	B	C	D
SK 02 - 12	21	18	3,5	2,5	790	350	750	150
SK 04 - 14	22,5	19,5						
SK 22 - 24 - 26	22	19						
SK 32 - 34 - 36								

SK 42-44 / SK 52-54-56 / SK 62-64-66
(Version 800 x 800)

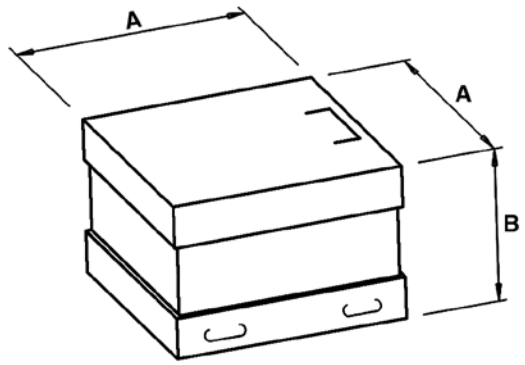




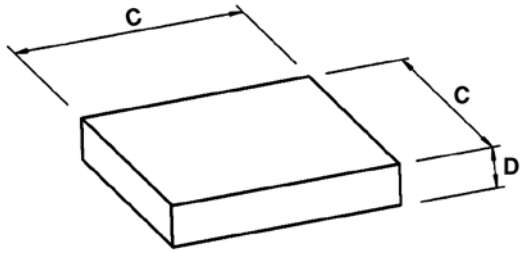
2 pipe units
3 Flow, heating/cooling 3/4"
4 Return, heating/cooling 3/4"

4 pipe units
1 Flow, heating 1/2"
2 Return, heating 1/2"
3 Flow, cooling 3/4"
4 Return, cooling 3/4"

Unit



Diffuser



Model	Unit		Diffuser		Packed unit dimensions (mm)			
	Weight packed unit	Weight unpacked unit	Weight packed unit	Weight unpacked unit				
	kg	kg	kg	kg	A	B	C	D
SK 42	40	35	7	5,5	1050	400	1000	200
SK 44	44	39						
SK 52 - 54 - 56								
SK 62 - 64 - 66								

www.eurovent-certification.com

2 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27°C d.b. +19°C w.b.
Water temperature: +7°C E.W.T. +12°C L.W.T.

HEATING (winter mode)
Entering air temperature: +20°C
Water temperature: +45°C E.W.T. +40°C L.W.T.

Model		SK 02			SK 12			SK 22			SK 32		
Speed		1	2	3	1	2	3	1	2	3	1	2	3
Air flow	m^3/h	310	420	610	310	420	520	320	500	710	430	610	880
Cooling total emission **(E)**	kW	1,25	1,60	1,92	1,82	2,31	2,64	2,23	3,30	4,26	2,91	3,82	4,93
Cooling sensible emission **(E)**	kW	0,99	1,29	1,58	1,33	1,72	2,00	1,55	2,35	3,11	2,05	2,75	3,65
Heating **(E)**	kW	1,38	1,80	2,24	1,85	2,42	2,80	2,12	3,28	4,37	2,85	3,85	5,15
Heating - Water 70-60°C	kW	2,80	3,66	4,56	4,19	4,91	5,68	4,83	6,96	9,25	6,10	8,25	10,63
Dp Cooling **(E)**	kPa	4,5	7,0	10,0	4,9	7,6	9,7	6,4	13,0	20,9	7,5	12,4	19,7
Dp Heating **(E)**	kPa	4,4	7,2	10,7	4,3	6,9	9,0	2,8	6,1	10,2	6,2	10,6	17,8
Sound power Lw **(E)**	dB(A)	33	40	49	33	40	45	33	45	53	41	49	59
Sound pressure Lp **(*)**	dB(A)	24	31	40	24	31	36	24	36	44	32	40	50
Fan **(E)**	W	25	32	57	25	32	44	25	44	68	32	57	90
	A	0,11	0,15	0,27	0,11	0,15	0,20	0,11	0,20	0,32	0,15	0,27	0,45
Water content	l	0,8	0,8	0,8	1,4	1,4	1,4	2,1	2,1	2,1	2,1	2,1	2,1
Dimensions	mm	575 x 575 x 275											

Model		SK 42			SK 52			SK 62		
Speed		1	2	3	1	2	3	1	2	3
Air flow	m^3/h	630	820	1140	710	970	1500	710	1280	1820
Cooling total emission **(E)**	kW	4,18	4,86	6,08	5,27	6,72	9,39	5,27	8,36	10,93
Cooling sensible emission **(E)**	kW	3,00	3,53	4,51	3,42	4,42	6,36	3,67	6,00	8,08
Heating **(E)**	kW	4,27	5,03	6,50	4,92	6,40	9,23	5,12	8,55	11,72
Heating - Water 70-60°C	kW	8,61	10,16	13,14	10,25	13,43	19,76	10,25	17,26	23,68
Dp Cooling **(E)**	kPa	10,9	14,3	21,6	9,4	14,7	26,9	9,4	21,8	35,6
Dp Heating **(E)**	kPa	7,0	9,4	15,0	7,1	11,4	22,0	7,6	19,2	33,8
Sound power Lw **(E)**	dB(A)	33	40	48	34	40	53	34	48	58
Sound pressure Lp **(*)**	dB(A)	24	31	39	25	31	44	25	39	49
Fan **(E)**	W	33	48	77	42	63	120	42	95	170
	A	0,15	0,23	0,36	0,18	0,28	0,53	0,18	0,42	0,74
Water content	l	3,0	3,0	3,0	4,0	4,0	4,0	4,0	4,0	4,0
Dimensions	mm	820 x 820 x 303								

(E) = Eurovent certified performance.
(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

www.eurovent-certification.com

4 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27°C d.b. +19°C w.b.
Water temperature: +7°C E.W.T. +12°C L.W.T.

HEATING (winter mode)
Entering air temperature: +20°C
Water temperature: +65°C E.W.T. +55°C L.W.T.

Model		SK 04			SK 14			SK 24			SK 26			SK 34			SK 36		
Speed		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Air flow	m^3/h	310	420	610	310	420	520	310	500	710	320	500	710	430	610	880	430	610	880
Cooling total emission **(E)**	kW	1,49	1,93	2,27	1,83	2,33	2,66	1,83	2,61	3,27	2,07	3,02	3,86	2,33	2,96	3,72	2,69	3,47	4,44
Cooling sensible emission **(E)**	kW	1,13	1,52	1,84	1,32	1,68	1,94	1,32	1,94	2,49	1,47	2,20	2,88	1,72	2,23	2,88	1,94	2,56	3,37
Dp Cooling **(E)**	kPa	6,0	10,0	13,5	4,6	6,9	8,8	4,6	8,8	13,4	4,0	7,0	10,5	7,2	11,2	17,0	6,0	9,0	14,0
Heating **(E)**	kW	1,72	2,23	2,66	2,13	2,66	3,04	2,13	3,04	3,86	1,73	2,71	2,91	2,61	3,33	4,19	2,14	2,66	3,29
Dp Heating **(E)**	kPa	5,2	8,3	11,4	4,6	6,8	8,7	4,6	8,7	13,3	2,6	4,6	6,7	6,4	9,9	15,0	3,9	5,7	8,4
Sound power Lw **(E)**	dB(A)	33	40	49	33	40	45	33	45	53	33	45	53	41	49	59	41	49	59
Sound pressure Lp **(*)**	dB(A)	24	31	40	24	31	36	24	36	44	24	36	44	32	40	50	32	40	50
Fan **(E)**	W	25	32	57	25	32	44	25	44	68	25	44	68	32	57	90	32	57	90
	A	0,11	0,15	0,27	0,11	0,15	0,20	0,11	0,20	0,32	0,11	0,20	0,32	0,15	0,27	0,45	0,15	0,27	0,45
Cooling water content	l	1,0	1,0	1,0	1,4	1,4	1,4	1,4	1,4	1,4	1,7	1,7	1,7	1,4	1,4	1,4	1,7	1,7	1,7
Heating water content	l	0,6	0,6	0,6	0,7	0,7	0,7	0,7	0,7	0,7	0,5	0,5	0,5	0,7	0,7	0,7	0,5	0,5	0,5
Dimensions	mm	575 x 575 x 275																	

Model		SK 44			SK 54			SK 56			SK 64			SK 66		
Speed		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Air flow	m^3/h	630	820	1140	710	970	1500	710	970	1500	710	1280	1820	710	1280	1820
Cooling total emission **(E)**	kW	4,11	4,98	6,26	4,48	5,60	7,59	4,95	6,27	8,65	4,48	6,84	8,72	4,95	7,75	10,03
Cooling sensible emission **(E)**	kW	2,93	3,60	4,61	3,21	4,09	5,71	3,49	4,49	6,37	3,21	5,09	6,67	3,49	5,64	7,51
Dp Cooling **(E)**	kPa	8,8	12,5	18,9	10,3	15,4	26,9	9,0	14,0	25,0	10,3	22,1	34,7	9,0	20,0	32,0
Heating **(E)**	kW	5,21	6,33	8,02	5,69	7,15	9,66	4,59	5,63	7,50	5,69	8,80	11,16	4,59	6,78	8,58
Dp Heating **(E)**	kPa	7,9	11,2	17,2	9,3	14,0	24,0	4,9	7,0	11,8	9,3	20,3	31,2	4,9	9,9	15,0
Sound power Lw **(E)**	dB(A)	33	40	48	34	40	53	34	40	53	34	48	58	34	48	58
Sound pressure Lp **(*)**	dB(A)	24	31	39	25	31	44	25	31	44	25	39	49	25	39	49
Fan **(E)**	W	33	48	77	42	63	120	42	63	120	42	95	170	42	95	170
	A	0,15	0,23	0,36	0,18	0,28	0,53	0,18	0,28	0,53	0,18	0,42	0,74	0,18	0,42	0,74
Cooling water content	l	3,0	3,0	3,0	3,0	3,0	3,0	3,6	3,6	3,6	3,0	3,0	3,0	3,6	3,6	3,6
Heating water content	l	1,4	1,4	1,4	1,4	1,4	1,4	1,1	1,1	1,1	1,4	1,4	1,4	1,1	1,1	1,1
Dimensions	mm	820 x 820 x 303														

(E) = Eurovent certified performance.
(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

SK-MB

All the SkyStar units can be supplied in MB version. This version allows a wide range of controls, including the infra-red remote control, which can manage one single unit or several units by using the Modbus RTU - RS 485 communication protocol.

SK-E

The Cassette 2 pipe models are available with electric heater that is controlled in place of the heating coil valve.
The electric heater is controlled in place of the hot water valve and not as integration to it.
The electric heater is hermetically sealed and supplied inside the coil pipes and therefore can be only factory mounted.
The electric heaters of the units are for single phase 230V supply.

Model	Emission
SK 12-E	1500 W
SK 22-E / SK 32-E	2500 W
SK 42-E / SK 52-E / SK 62-E	3000 W

RSP

Raised Cassette version without condensate pump, for gravity condensate drain.

These units are higher than the standard version; refer to the technical manual for the size and the installation requirements.

For RSP version the MCT kit, the fitted condensate pump with higher pressure head kit and the IAQ filter are not available.

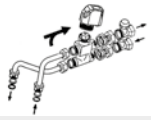
MCT

The **MCT** version has been designed for all environments where false ceilings are not featured or cannot be constructed.
The cover cabinet fits perfectly to the air intake and outlet diffuser, maintaining the appealing design that defines the SkyStar series.
The water fittings can be turned to point upwards.
The **MCT** series includes 7 models, with an installation height of up to 5 m, thanks to the highly flexible adjustment of the air distribution louvers.
All the technical specifications described on the previous pages remain the same, while keeping in mind that the **MCT** series features one coil only (two pipe systems), there is no possibility of fresh air intake, there is no possibility of additional electric heater.
The **MCT** version features a special casing delivered in separate packaging; this must only be fitted after having installed the SkyStar unit and completed the water and electrical connections.

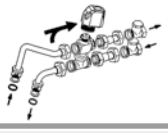
3 way ON-OFF valves
with micrometric lockshield valve

Valve set, 3 ways, ON-OFF, with thermoelectric actuator.
The set includes connection pipes and holders.

SK 02-04 / 12-14 / 22-24-26 / 32-34-36



SK 42-44 / 52-54-56 / 62-64-66



2 way ON-OFF valves
with micrometric lockshield valve

Valve set, 2 ways, ON-OFF, with thermoelectric actuator.
The set includes connection pipes and holders.

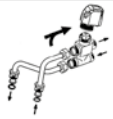
SK 02-04 / 12-14 / 22-24-26 / 32-34-36

SK 42-44 / 52-54-56 / 62-64-66

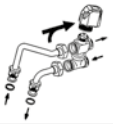
3 way ON-OFF valves
with simplified kit

Valve set, 3 ways, ON-OFF, with thermoelectric actuator.
The set includes connection pipes.

SK 02-04 / 12-14 / 22-24-26 / 32-34-36



SK 42-44 / 52-54-56 / 62-64-66



2 way ON-OFF valves
with simplified kit

Valve set, 2 ways, ON-OFF, with thermoelectric actuator.
The set includes connection pipes.

SK 02-04 / 12-14 / 22-24-26 / 32-34-36

SK 42-44 / 52-54-56 / 62-64-66

V20VSK **Balancing valves independent from the system pressure (Oventrop)**

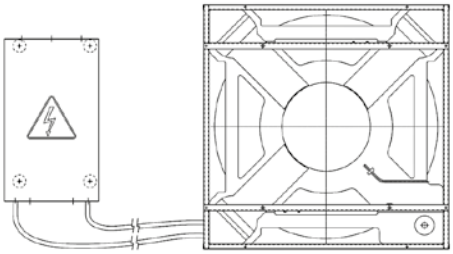
(for main and additional coil)

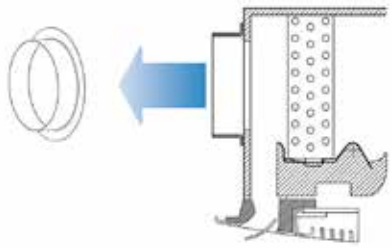
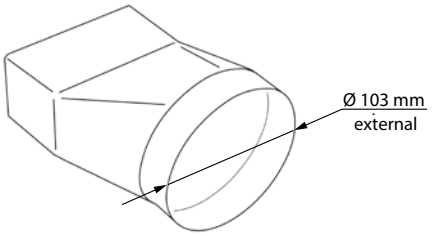
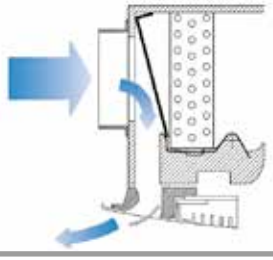
V2DFSK **Balancing valves independent from the system pressure (Danfoss)**

(for main and additional coil)

Unit with remote electric board

On request the Skystar cassettes are available with electric control panel reachable from below and with the electric board that can be placed in a remote position.

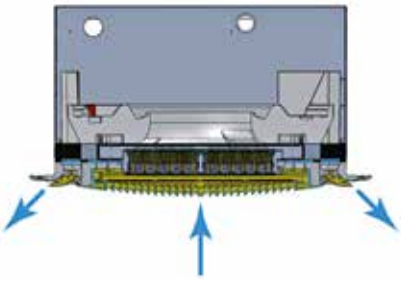


CDA	**Air distribution connection**	
CAP	**Fresh air connection**	
PRT	**Fresh air kit** This is used to introduce fresh air into the environment directly through the diffuser.	
PM-SK	**Fitted condensate pump** with higher pressure head	
KAL	**Hydraulic and electrical connection on the same side kit**	

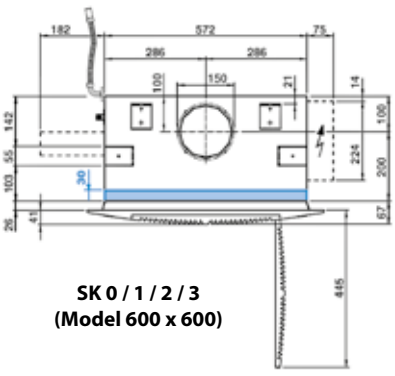
IAQ accessory

SK / SK-ECM Cassette can be equipped with the innovative plate type electrostatic filter, **Crystall**, combining air treatment and purifying in a single product. The electrostatic filter is **patented and certified** according to Standard EN 16890.

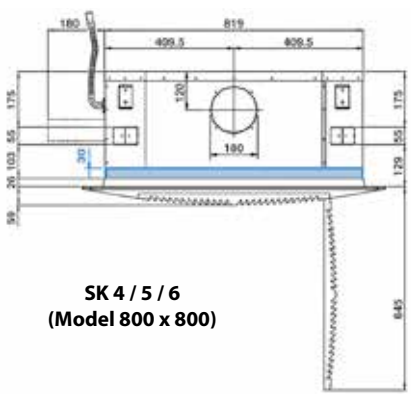
CRYSTALL AIR QUALITY SABIANA



Dimensions



SK 0 / 1 / 2 / 3
(Model 600 x 600)



SK 4 / 5 / 6
(Model 800 x 800)

Electronic wall controls

SK version	
WM-3V	3 speed control
WM-T	3 speed control with electronic thermostat and manual summer/winter switch
WM-TQR	3 speed control with electronic thermostat and centralized/manual summer/winter switch
WM-AU	Automatic speed control with electronic thermostat and summer/winter switch (to be used with UPM-AU or UP-AU only)
T-MB2	Wall control with LCD color display and WiFi (to be used with UPM-AU or UP-AU only)
WM-503-AC-EC	Automatic speed control with electronic thermostat to be mounted in the 503 box (to be used with UP-503-AC-EC only)
T2T	Electromechanical thermostat with summer/winter switch (only for 2 pipe units)
UPM-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, fitted on the unit
UP-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, not fitted on the unit
UP-503-AC-EC	UP-503-AC-EC power unit for WM-503-AC-EC remote control, not fitted on the unit

Electronic controls

SK-MB version	
T-MB2	Wall control with LCD color display and WiFi (to be used with SK-MB version only)
RCS-RT03	Infra-red remote control with receiver supplied with separate packaging (to be used with SK-MB version only)
RT03 / RR03	Infra-red remote control supplied with separate packaging (to be used with SK-MB version only)
RT04	Infra-red remote control supplied with separate packaging (to be used with MB board only) - **Available from April 2025**
RCS	Receiver for infra-red remote control supplied with separate packaging (to be used with SK-MB version only)
RS	Receiver for infra-red remote control, MD-600 and MD-800 metal diffuser supplied with separate packaging (to be used with SK-MB version only)
PSM-DI	PSM-DI multifunction control panel (to be used with SK-MB version only)
T-DI	T-DI touch screen multifunction control panel (to be used with SK-MB version only)
SabWeb	Web gateway for Sabiana Cloud (to be used with SK-MB version only)

Sabianet management system for a network of fan coils	
Sabianet	Sabianet (to be used with SK-MB version only)
Router-S	Router for Sabianet (default) or for BMS systems not provided by Sabiana
SIOS	Relay output board for Sabianet

Controls for KNX systems

KNX systems	
WM-KNX	Wall control with electronic thermostat and summer/winter switch (to be used with UP-KNX and PL mounting plate only)
UP-KNX	UP-KNX power unit supplied with separate packaging
PL-503-B	Mounting plate for rectangular box
PL-QUA-B	Mounting plate for wall round or square box

NOTE: for more information about Controls and for full list of main Accessories, please see the dedicated pages.

SkyStar SK-ECM

Cassette Fan Coil Unit with EC Brushless Electronic Motor and Inverter Board

The **SkyStar SK-ECM** series, available in **5 models**, uses an innovative brushless synchronous permanent magnet electronic motor controlled by an inverter board that is directly installed on the unit.

The air flow can be varied **continuously** with a 1-10 V signal from Sabiana controls or by independent controllers (programmable controllers with a 1-10 V output). The extreme efficiency, also at a low speed, makes it possible to greatly reduce the electric consumption (more **than 75% less** in comparison to a traditional motor) with absorption values, under normal operating conditions, that are **no greater than 10 Watt** in the entire range.

The brushless motor is characterised by a constant synchronous speed, independently of the applied load, that depends only on the motor power supply frequency, which is modulated by the inverter.

It consumes less because:

- The motor always works at its point of maximum efficiency.
- In the brushless motor, the rotor's permanent magnets generate the magnetising power autonomously.
- The motor always operates at the synchronous speed, as a result there are no induced currents that reduce efficiency

The main advantages are

- Large reduction in energy consumption, thanks to an optimal response to the thermal load of the environment during every moment of the day.
- Operating silence at all rotation speeds.
- Ability to operate at any rotation speed.

All the **SkyStar SK-ECM** units can be supplied in **MB version**. This version allows a wide range of controls, including the infra-red remote control, which can manage one single unit or several units by using the **Modbus RTU - RS 485** communication protocol.

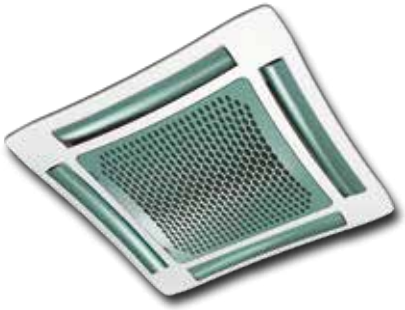
Air diffusers

Intake grid, frame and adjustable air distribution louvers on each side, made from ABS.

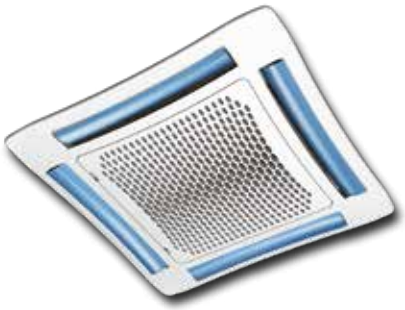
HTA version
white ABS, RAL 9003

HTB version
intake grid, frame and louvers in a colour of choice

HTC version
intake grid and louvers in a colour of choice, plus white ABS frame RAL 9003



HTD version
louvers in a colour of choice, while the grid and frame are made from ABS, RAL 9003



MD-600 / MD-800 version
metal diffuser painted in RAL 9003 white colour to perfectly fit into the false ceiling standard modules without overlapping parts

Casing: made from galvanized steel with internal thermal insulation with polyolefin (PO) foam (B-s2-d0 EN 13501-1) and external anti-condensate lining.

Control equipment:
SK-ECM version: it consists of the pump control circuit board and the inverter circuit board.
SK-ECM-MB version: it consists of the MB board (that integrates pump control) and the inverter board.

Fan assembly: the fan assembly, which is mounted on anti-vibrating supports, is extremely silent.
The radial fan has been designed to optimise performance, using wing profile blades with a shape that reduces turbulence, increasing efficiency and reducing noise.
The fans are connected to a three phase permanent magnet brushless electronic motor that is controlled with reconstructed current according to a **BLAC** sinusoidal wave.
The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a **switching system**, it generates a three-phase frequency modulated, wave form power supply.
The electric power supply required for the machine is therefore single-phase with voltage of **230 V** and frequency of **50 - 60 Hz**.

Coil: made of copper tubes with bonded aluminium fins for maximum transfer contact. The coils have 2 or 3 rows for 2 pipe models and 2+1 rows for 4 pipe models (the heating row is on the inside part of the coil).

For 4 pipe systems two versions are available

- **SK 14, SK 44** supply an higher heating emission
- **SK 26, SK 36, SK 56** supply an higher cooling emission.

The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion

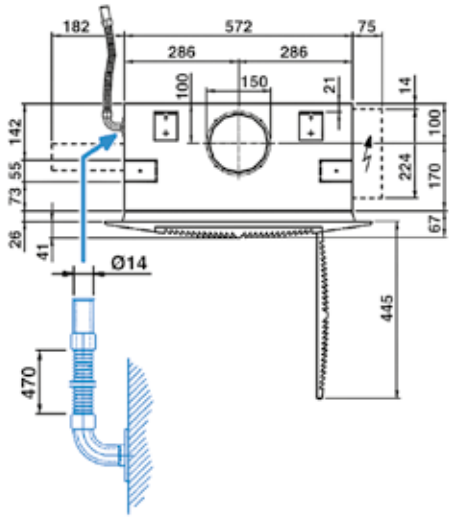
Condensate collection tray: ihigh density ABS polystyrene foam condensate tray, shaped in order to optimize the air diffusion, fire retardant rating B1 to DIN 4102.

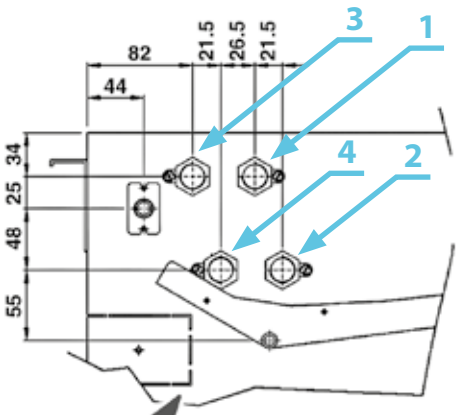
Air filter: synthetic washable filter, easily removable.

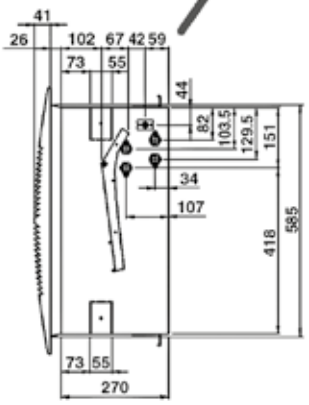
Condensate pump: float switch centrifugal pump with 650 mm of maximum head, built into the unit and wired to the control panel on the outside of the casing

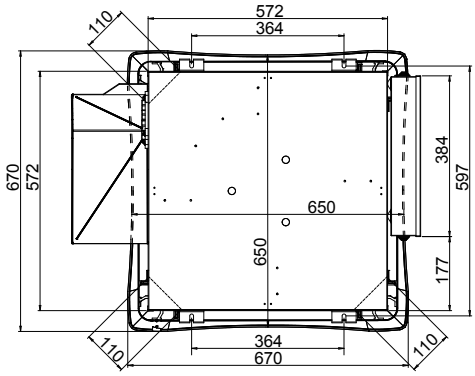
Valve set:: two or three way valves for ON/OFF operation, with pipe mounting kit
and thermostatic actuator.

SK 12-14 / SK 22-26 / SK 32-36
(Version 600 x 600)







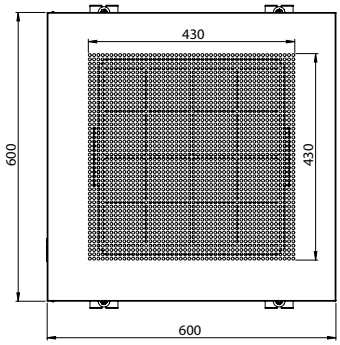


2 pipe units
3 Flow, heating/cooling 1/2"
4 Return, heating/cooling 1/2"

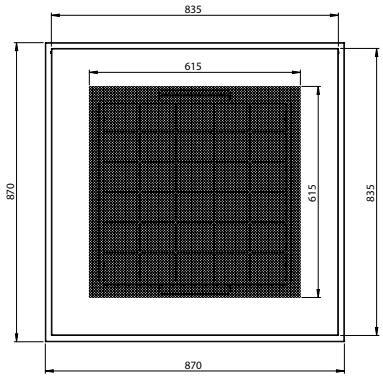
4 pipe units
1 Flow, heating 1/2"
2 Return, heating 1/2"
3 Flow, cooling 1/2"
4 Return, cooling 1/2"

Metal diffuser

MD-600



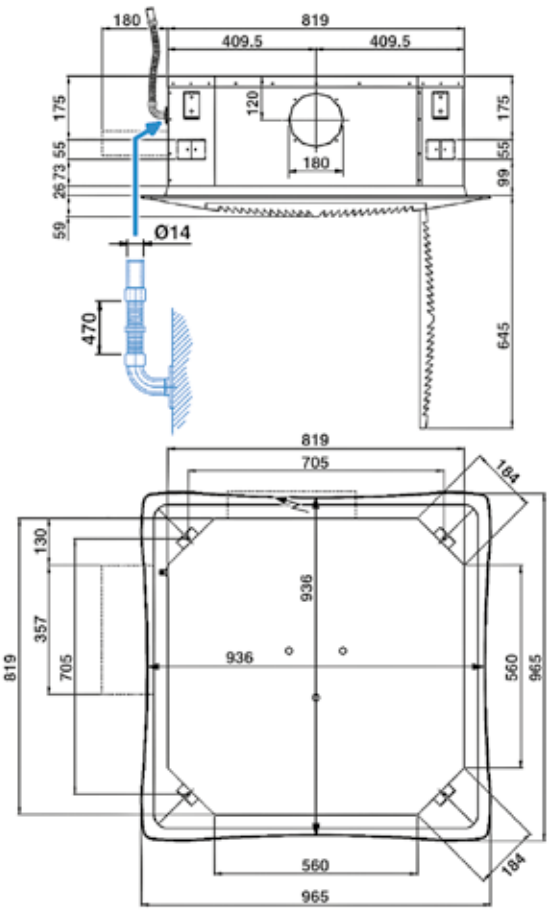
MD-800

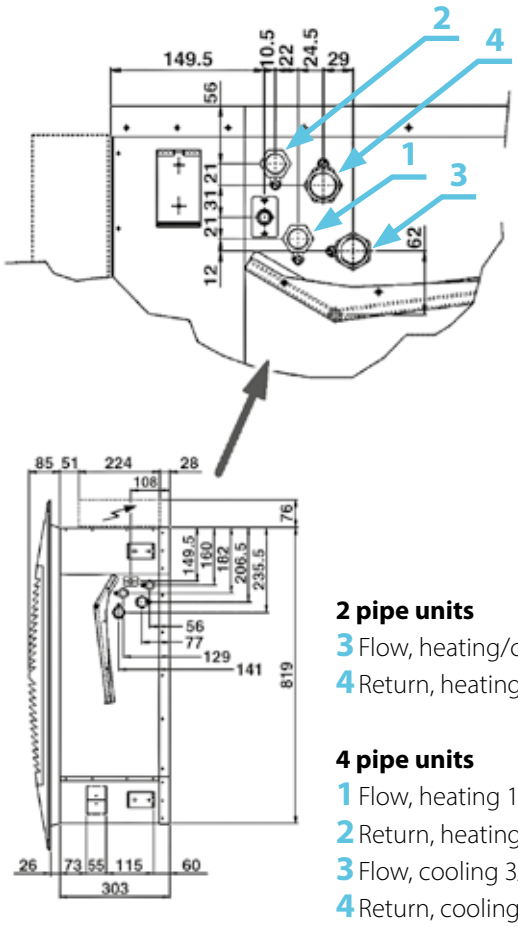


Model	Code
MD-600	9079420
MD-800	9079417

Model	Unit		Diffuser		Packed unit dimensions (mm)			
	Weight packed unit	Weight unpacked unit	Weight packed unit	Weight unpacked unit				
	kg	kg	kg	kg	A	B	C	D
SK 12	20	17	3,5	2,5	790	350	750	150
SK 14	22	19						
SK 22 - 26	21,5	18,5						
SK 32 - 36	21	18						

SK 42-44 / SK 52-56
(Version 800 x 800)

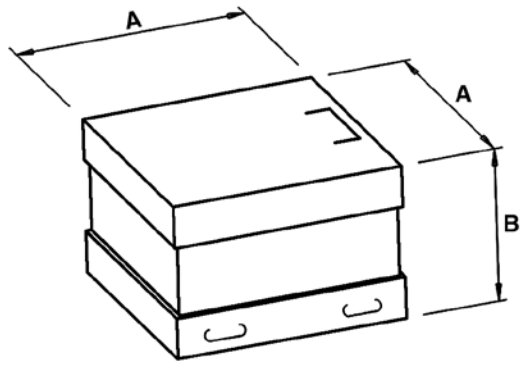




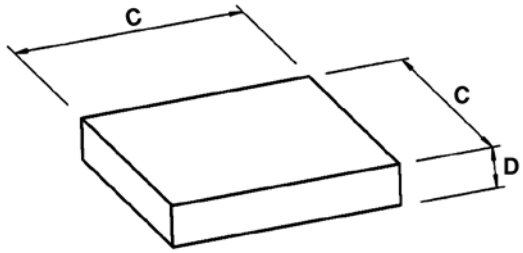
2 pipe units
3 Flow, heating/cooling 3/4"
4 Return, heating/cooling 3/4"

4 pipe units
1 Flow, heating 1/2"
2 Return, heating 1/2"
3 Flow, cooling 3/4"
4 Return, cooling 3/4"

Unit



Diffuser



Model	Unit		Diffuser		Packed unit dimensions (mm)			
	Weight packed unit	Weight unpacked unit	Weight packed unit	Weight unpacked unit				
	kg	kg	kg	kg	A	B	C	D
SK 42	35	31	7	5,5	1050	400	1000	200
SK 44	40	35						
SK 52 - 56								

www.eurovent-certification.com

2 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27°C d.b. +19°C w.b.
Water temperature: +7°C E.W.T. +12°C L.W.T.

HEATING (winter mode)
Entering air temperature: +20°C
Water temperature: +45°C E.W.T. +40°C L.W.T.

Model		SK–ECM 12			SK–ECM 22			SK–ECM 32			SK–ECM 42			SK–ECM 52		
Inverter Power **(V)**		1	5	10	1	5	10	1	5	10	1	5	10	1	5	10
Speed		**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**
Air flow	m^3/h	310	380	535	310	445	710	360	610	880	630	870	1165	710	1130	1770
Cooling total emission **(E)**	kW	1,84	2,16	2,73	2,24	3,04	4,30	2,55	3,85	4,96	4,20	5,13	6,30	5,28	7,69	10,69
Cooling sensible emission **(E)**	kW	1,35	1,60	2,07	1,57	2,16	3,15	1,80	2,79	3,68	3,02	3,75	4,69	3,68	5,50	7,83
Heating **(E)**	kW	1,85	2,22	2,87	2,12	2,98	4,36	2,46	3,85	5,15	4,27	5,30	6,70	4,90	7,34	10,56
Heating - Water 70-60 °C	kW	3,75	4,51	5,82	4,28	6,01	8,81	4,96	7,79	10,42	8,61	10,72	13,54	9,87	14,82	21,37
Dp Cooling **(E)**	kPa	4,9	6,6	10,1	4,6	11,0	15,1	5,9	12,4	19,7	10,9	15,6	22,7	9,4	18,5	33,0
Dp Heating **(E)**	kPa	4,3	5,9	9,4	3,6	6,6	13,2	4,7	10,6	17,8	9,6	14,2	21,6	7,0	14,6	28,1
Fan **(E)**	W	5	8	16	5	11	31	7	21	62	10	17	33	10	32	108
Sound power Lw **(E)**	dB(A)	33	39	47	33	43	54	37	50	60	33	39	48	34	47	57
Sound pressure Lp **(*)**	dB(A)	24	30	38	24	34	45	28	41	51	24	30	39	25	38	48
Water content	l	1,4	1,4	1,4	2,1	2,1	2,1	2,1	2,1	2,1	3,0	3,0	3,0	4,0	4,0	4,0
Dimensions	mm	575 x 575 x 275									820 x 820 x 303					

4 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27°C d.b. +19°C w.b.
Water temperature: +7°C E.W.T. +12°C L.W.T.

HEATING (winter mode)
Entering air temperature: +20°C
Water temperature: +65°C E.W.T. +55°C L.W.T.

Model		SK–ECM 14			SK–ECM 26			SK–ECM 36			SK–ECM 44			SK–ECM 56		
Inverter Power **(V)**		1	5	10	1	5	10	1	5	10	1	5	10	1	5	10
Speed		**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**	**MIN**	**MED**	**MAX**
Air flow	m^3/h	310	380	535	310	445	710	360	610	880	630	870	1165	710	1130	1770
Cooling total emission **(E)**	kW	1,85	2,17	2,75	2,09	2,81	3,90	2,37	3,51	4,47	4,29	5,29	6,48	4,97	7,14	9,76
Cooling sensible emission **(E)**	kW	1,20	1,42	1,84	1,49	2,03	2,92	1,70	2,60	3,40	3,07	3,82	4,80	3,51	5,17	7,29
Heating **(E)**	kW	2,13	2,51	3,18	1,73	2,20	2,91	1,92	2,66	3,29	5,41	6,65	8,24	4,58	6,27	8,33
Dp Cooling **(E)**	kPa	4,6	6,2	9,5	3,3	5,6	10,3	4,1	8,4	13,1	9,4	13,6	19,8	8,8	17,0	30,1
Dp Heating **(E)**	kPa	4,6	6,1	9,4	2,6	4,1	6,7	3,2	5,7	8,4	8,5	12,3	18,1	4,9	8,6	14,3
Fan **(E)**	W	5	8	16	5	11	31	7	21	62	10	17	33	10	32	108
Sound power Lw **(E)**	dB(A)	33	39	47	33	43	54	37	50	60	33	39	48	34	47	57
Sound pressure Lp **(*)**	dB(A)	24	30	38	24	34	45	28	41	51	24	30	39	25	38	48
Cooling water content	l	1,4	1,4	1,4	1,7	1,7	1,7	1,7	1,7	1,7	3,0	3,0	3,0	3,6	3,6	3,6
Heating water content	l	0,7	0,7	0,7	0,5	0,5	0,5	0,5	0,5	0,5	1,4	1,4	1,4	1,1	1,1	1,1
Dimensions	mm	575 x 575 x 275									820 x 820 x 303					

(E) = Eurovent certified performance.
(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

SK-ECM-MB

All the SkyStar ECM units can be supplied in MB version.

This version allows a wide range of controls, including the infra-red remote control, which can manage one single unit or several units by using the Modbus RTU - RS 485 communication protocol.

SK-ECM-E

The Cassette 2 pipe models are available with electric heater that is controlled in place of the heating coil valve.
The electric heater is controlled in place of the hot water valve and not as integration to it.
The electric heater is hermetically sealed and supplied inside the coil pipes and therefore can be only factory mounted.
The electric heater of the units are for single phase 230V supply.

ECM Model	Emission
SK 12-E	1500 W
SK 22-E / SK 32-E	2500 W
SK 42-E / SK 52-E	3000 W

RSP-ECM

Raised Cassette version without condensate pump, for gravity condensate drain.

These units are higher than the standard version; refer to the technical manual for the size and the installation requirements.

For RSP-ECM version the MCT kit, the fitted condensate pump with higher pressure head kit and the IAQ filter are not available.

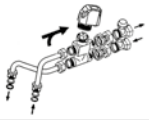
MCT

The **MCT** version has been designed for all environments where false ceilings are not featured or cannot be constructed.
The cover cabinet fits perfectly to the air intake and outlet diffuser, maintaining the appealing design that defines the SkyStar series.
The water fittings can be turned to point upwards.
The **MCT** series includes 7 models, with an installation height of up to 5 m, thanks to the highly flexible adjustment of the air distribution louvers.
All the technical specifications described on the previous pages remain the same, while keeping in mind that the **MCT** series features one coil only (two pipe systems), there is no possibility of fresh air intake, there is no possibility of additional electric heater.
The **MCT** version features a special casing delivered in separate packaging; this must only be fitted after having installed the SkyStar unit and completed the water and electrical connections.

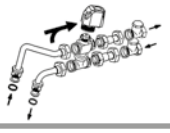
3 way ON-OFF valves
with micrometric lockshield valve

Valve set, 3 ways, ON-OFF, with thermoelectric actuator.
The set includes connection pipes and holders.

SK 12-14 / 22-26 / 32-36



SK 42-44 / 52-56



2 way ON-OFF valves
with micrometric lockshield valve

Valve set, 2 ways, ON-OFF, with thermoelectric actuator.
The set includes connection pipes and holders.

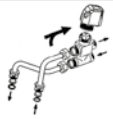
SK 12-14 / 22-26 / 32-36

SK 42-44 / 52-56

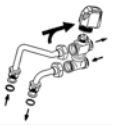
3 way ON-OFF valves
with simplified kit

Valve set, 3 ways, ON-OFF, with thermoelectric actuator.
The set includes connection pipes.

SK 12-14 / 22-26 / 32-36



SK 42-44 / 52-56



2 way ON-OFF valves
with simplified kit

Valve set, 2 ways, ON-OFF, with thermoelectric actuator.
The set includes connection pipes.

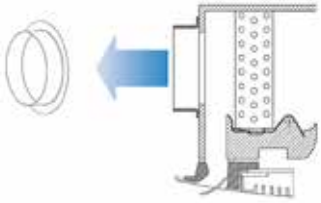
SK 12-14 / 22-26 / 32-36

SK 42-44 / 52-56

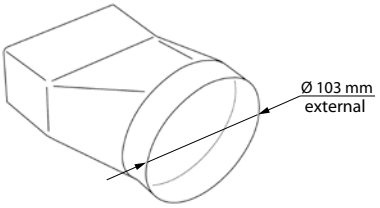
V20VSK **Balancing valves independent from the system pressure (Oventrop)**
(for main and additional coil)

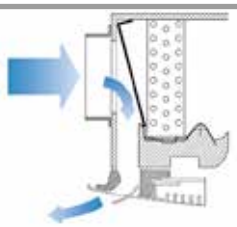
V2DFSK **Balancing valves independent from the system pressure (Danfoss)**
(for main and additional coil)

CDA **Air distribution connection**



CAP **Fresh air connection**



PRT	**Fresh air kit** This is used to introduce fresh air into the environment directly through the diffuser.	
PM-SK	**Fitted condensate pump** with higher pressure head	
KAL	**Hydraulic and electrical connection on the same side kit**	

IAQ accessory refer to "IAQ accessory" at "SkyStar SK accessories" section pages

Electronic wall controls

SK-ECM version	
WM-AU	Automatic speed control with electronic thermostat and summer/winter switch (to be used with UPM-AU or UP-AU only)
T-MB2	Wall control with LCD color display and WiFi (to be used with UPM-AU or UP-AU only)
WM-503-AC-EC	Automatic speed control with electronic thermostat to be mounted in the 503 box (to be used with UP-503-AC-EC only)
WM-S-ECM	Continuous fan speed control with electronic thermostat, summer/winter switch and liquid crystal display
UPM-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, fitted on the unit
UP-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, not fitted on the unit
UP-503-AC-EC	UP-503-AC-EC power unit for WM-503-AC-EC remote control, not fitted on the unit

Electronic controls

SK-ECM-MB version	
T-MB2	Wall control with LCD color display and WiFi (to be used with SK-ECM-MB version only)
RCS-RT03	Infra-red remote control with receiver supplied with separate packaging (to be used with SK-ECM-MB version only)
RT03 / RR03	Infra-red remote control supplied with separate packaging (to be used with SK-ECM-MB version only)
RT04	Infra-red remote control supplied with separate packaging (to be used with MB board only) - **Available from April 2025**
RCS	Receiver for infra-red remote control supplied with separate packaging (to be used with SK-ECM-MB version only)
RS	Receiver for infra-red remote control, MD-600 and MD-800 metal diffuser supplied with separate packaging (to be used with SK-ECM-MB version only)
PSM-DI	PSM-DI multifunction control panel (to be used with SK-ECM-MB version only)
T-DI	T-DI touch screen multifunction control panel (to be used with SK-MB version only)
SabWeb	Web gateway for Sabiana Cloud (to be used with SK-MB version only)

Sabianet management system for a network of fan coils	
Sabianet	Sabianet (to be used with SK-ECM-MB version only)
Router-S	Router for Sabianet (default) or for BMS systems not provided by Sabiana
SIOS	Relay output board for Sabianet

Controls for KNX systems

KNX systems	
WM-KNX	Wall control with electronic thermostat and summer/winter switch (to be used with UP-KNX and PL mounting plate only)
UP-KNX	UP-KNX power unit supplied with separate packaging
PL-503-B	Mounting plate for rectangular box
PL-QUA-B	Mounting plate for wall round or square box

NOTE: for more information about Controls and for full list of main Accessories, please see the dedicated pages.

SkyStar Jumbo ECM

Fan Coil Unit Cassette with Electronic Motor and Inverter Board

Innovating and beautiful design, perfect to meet all air-conditioning requirements of wide environments, **4 different versions**, high control flexibility, easy maintenance: the new cassette fan coil unit **SkyStar Jumbo ECM** is the result of an extended technical and design development aimed at achieving the highest level in terms of performance, silent operation and control possibility.

The range **SkyStar Jumbo ECM** uses an innovative brushless synchronous permanent magnet electric motor controlled by an inverter board that is directly installed on the unit.

The air flow can be varied **continuously** with a 1-10 V signal from **Sabiana** controls or by independent controllers (programmable controllers with a 1-10 V output).The extreme efficiency, also at a low speed, makes possible a great reduction in electric consumption (more than **75% less** in comparison to a traditional motor) with absorption values, under normal operating conditions, that are **no greater than 20 Watt** in the entire range.

The brushless motor is characterised by a constant synchronous speed, independently of the applied load, that depends only on the motor power supply frequency, which is modulated by the inverter.

It consumes less because:

- The motor always works at its point of maximum efficiency.
- In the brushless motor, the rotor's permanent magnets generate the magnetising power autonomously.
- The motor always operates at the synchronous speed, as a result there are no induced currents that reduce efficiency.

The main advantages are:

- Large reduction in energy consumption, thanks to an optimal response to the thermal load of the environment during every moment of the day.
- Operating silence at all rotation speeds.
- Ability to operate at any rotation speed.

All the units **SkyStar Jumbo ECM** can be supplied in **MB** version. This version includes a wide range of controls, including the infra-red remote control, which allow managing one single unit or several units by using the Bus communication protocol.

In the MB version it is possible to control at the same time the (motorized) outlet louvers with the infra-red remote-control or with the T-MB2 wall control.

Casing: is made of galvanized steel with internal thermal insulation with polyolefin (PO) foam (B-s2-d0 EN 13501-1) and external anti-condensate lining.

Control panel:
SK-ECM / SK-ECM-E version:
it consists of the pump control circuit board and the inverter circuit board.
SK-ECM-MB / SK-ECM-MB-E version:
it consists of the MB electronic board (that integrates pump control) and the inverter board.
The diffusion louvers are adjustable with the infra-red remote control or with T-MB2 wall control.

Fan assembly: secured on anti-vibration mountings, is particularly silent.
The radial fan has been designed to optimise performance, using wing profile blades with a shape that reduces turbulence, increasing efficiency and reducing noise.
The fans are connected to a three phase permanent magnet brushless electronic motor that is controlled with reconstructed current according to a BLAC sinusoidal wave.
The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a switching system, it generates a three-phase frequency modulated, wave form power supply.
The electric power supply required for the machine is therefore single-phase with voltage of 230 V and frequency of 50 - 60 Hz.

Coil: made of copper tubes with bonded aluminium fins for maximum transfer contact. 3 row coil for 2 pipe models and 2,5 + 1/2 row coil for 4 pipe models (the heating row is on the inside part of the coil).
The heat exchanger is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.

Condensate collection tray: high density polystyrene foam condensate tray, shaped in order to optimize the air diffusion. Fire retardant rating B1 to DIN 4102.

Filter: easy access to the filter that is available in both versions, the G0 filter (synthetic regenerable washable) and in the **ePM$_1$ 55% - F7 filter class** (to change at the end of its life-cycle).

Condensate pump: float switch centrifugal pump with 650 mm of maximum head, integral to the unit and wired to the control panel on the outside of the casing.

Valve set: two or three way valves for ON/OFF operation, with pipe mounting kit and ball valves.

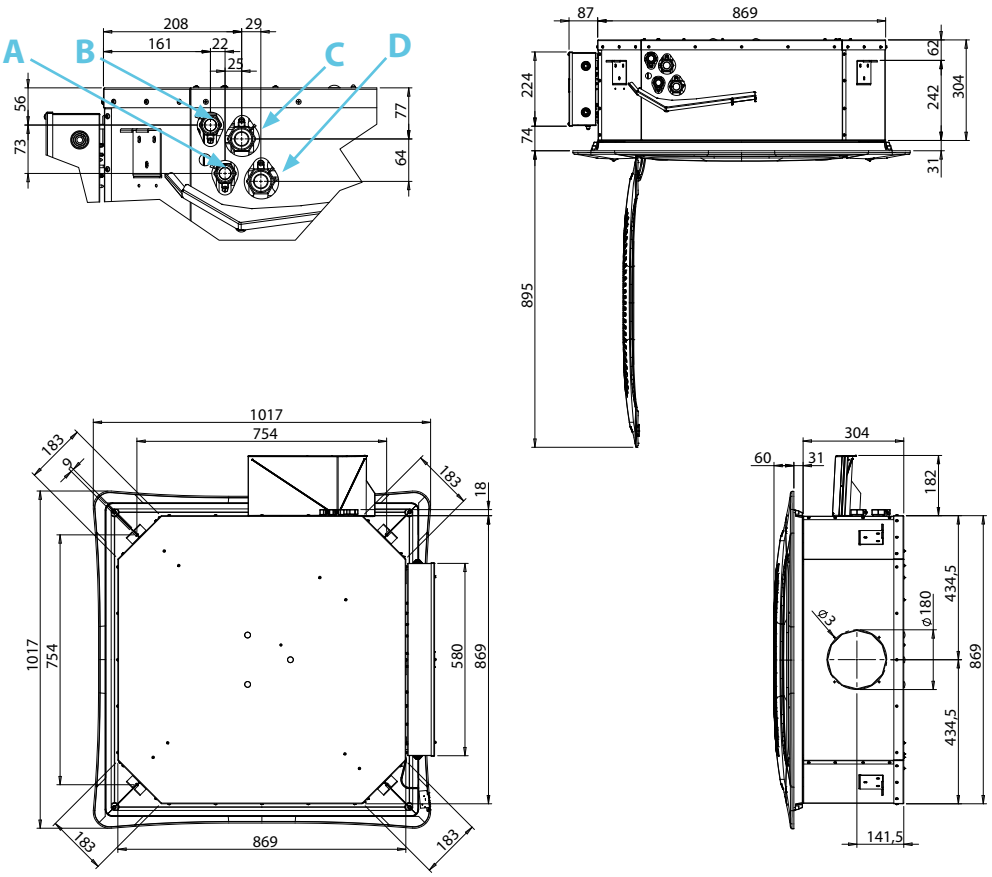
Air intake and distribution grids

Intake grids, frame and adjustable air distribution louvers on each side, made of ABS.

HTA version
in white ABS, RAL 9003

HTB version
in ABS one single color to choose

SK-ECM 72-76 / SK-ECM 82-86



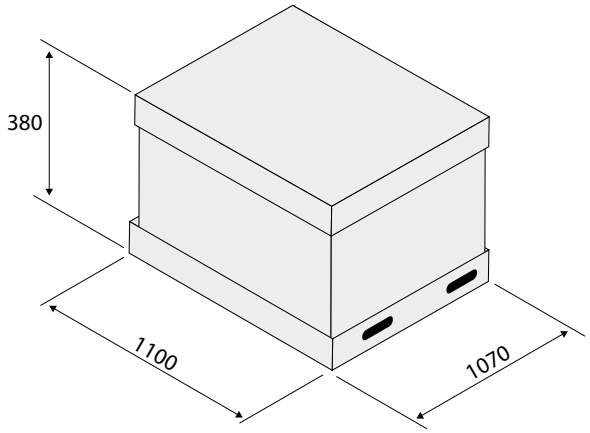
2 pipe unit

A Flow, heating/cooling 1"
B Return, heating/cooling 1"

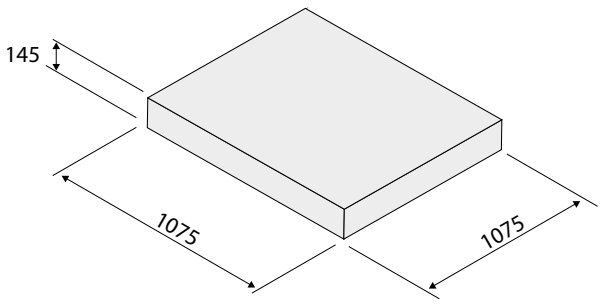
2 pipe unit

A Flow, cooling 1"
B Return, cooling 1"
C Flow, heating 3/4"
D Return, heating 3/4"

Unit



Diffuser



Model	SK-ECM 72	SK-ECM 76	SK-ECM 82	SK-ECM 86
Weight with packaging kg	52			
Weight without packaging kg	42			

Model	SK-ECM 72	SK-ECM 76	SK-ECM 82	SK-ECM 86
Weight with packaging kg	9,4			
Weight without packaging kg	7,5			

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2 pipe unit. The following standard rating conditions are used:

COOLING
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

HEATING
Entering air temperature: +20 °C d.b.
Water temperature: +45 °C E.W.T. +40 °C L.W.T.

Model		SK-ECM 72					SK-ECM 82				
Speed		1	3	5	7,5	10	1	3	5	7,5	10
		MIN		**MED**		**MAX**	**MIN**		**MED**		**MAX**
Air flow	mc/h	790	1040	1290	1600	1905	1025	1340	1650	2060	2480
Cooling total emission **(E)**	kW	6,36	7,95	9,43	11,10	12,60	7,86	9,72	11,38	13,35	15,13
Cooling sensible emission **(E)**	kW	4,45	5,65	6,77	8,09	9,31	5,58	7,00	8,30	9,88	11,41
Heating **(E)**	kW	6,18	7,93	9,59	11,55	13,39	8,72	9,91	11,86	14,29	16,40
Dp Cooling **(E)**	kPa	6,6	9,8	13,4	18,0	22,7	9,6	14,1	18,8	25,2	31,8
Dp Heating **(E)**	kPa	5,4	8,4	11,8	16,5	21,5	8,2	12,5	17,3	24,2	31,0
Motor power input **(E)**	W	13	22	35	59	93	21	38	64	113	183
Sound power Lw **(E)**	dB(A)	38	44	49	54	58	44	50	55	60	64
Sound pressure **(*)**	dB(A)	29	35	40	45	49	35	41	46	51	55
Water content	l	4,6					4,6				
Dimensions	mm	816x816x303									

4 pipe unit. The following standard rating conditions are used:

COOLING
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

HEATING
Entering air temperature: +20 °C d.b.
Water temperature: +65 °C E.W.T. +55 °C L.W.T.

Model		SK-ECM 76					SK-ECM 86				
Speed		1	3	5	7,5	10	1	3	5	7,5	10
		MIN		**MED**		**MAX**	**MIN**		**MED**		**MAX**
Air flow	mc/h	790	1040	1290	1600	1905	1025	1340	1650	2060	2440
Cooling total emission **(E)**	kW	6,07	7,53	8,86	10,35	11,61	7,45	9,10	10,59	12,30	13,59
Cooling sensible emission **(E)**	kW	4,33	5,46	6,53	7,74	8,87	5,40	6,73	7,96	9,44	10,68
Heating **(E)**	kW	6,01	7,27	8,40	9,63	10,55	7,19	8,62	9,80	11,05	12,17
Dp Cooling **(E)**	kPa	7,0	10,3	13,8	18,3	22,6	10,1	14,5	19,1	25,2	30,4
Dp Heating **(E)**	kPa	7,2	10,2	13,2	16,9	19,9	10,0	13,8	17,4	21,6	25,7
Motor power input **(E)**	W	13	22	35	59	93	21	38	64	113	183
Sound power Lw **(E)**	dB(A)	38	44	49	54	58	47	50	55	60	64
Sound pressure **(*)**	dB(A)	29	35	40	45	49	38	41	46	51	55
Cooling water content	l	3,6					3,6				
Heating water content	l	1,2					1,2				
Dimensions	mm	816x816x303									

(E) = EUROVENT certified performance
(*) = The sound pressure levels are 9 dB (A) lower than the sound power levels, apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

AVAILABLE VERSIONS

SK-ECM-MB

All the **SkyStar Jumbo ECM** units can be supplied in **MB** version.

This version includes a wide range of controls, including the infra-red remote control, which allows managing one single unit or several units by using the Bus communication protocol.

SK-ECM-E
SK-ECM-MB-E

The 2 pipe model Cassette units are available with electric heater. The electric heater is controlled in place of the hot water valve and not as integration to it.

The electric heaters are hermetically sealed and supplied inside the coil pipes and therefore can be only factory mounted. The electric heaters of the unit can be for 230Vac 1Ph 50-60Hz or 400Vac 3Ph 50-60Hz supply.

ECM model	Power installed
All models	3000 W

MCT 900

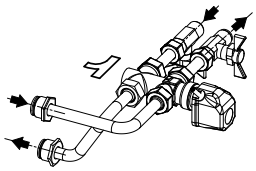
The MCT version has been designed for all environments where false ceilings are not featured or cannot be constructed.
The casing fits perfectly to the air intake and outlet diffuser, maintaining the appealing design that defines the SkyStar series.
The water fittings can be turned to point upwards.
The MCT series includes 2 models, with an installation height of up to 5 m, thanks to the highly flexible adjustment of the air distribution louvers.
All the technical specifications described on the previous pages remain the same, while keeping in mind that:

- the MCT series features one coil only (2 pipe systems)
- there is no possibility of fresh air intake
- there is no possibility of additional electric heater

The MCT version features a special casing, in COOL GREY 1C colour, delivered in separate packaging; this must only be fitted after having installed the SkyStar unit and completed the water and electrical connections.

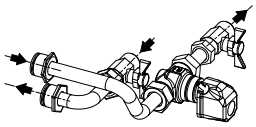
ON-OFF 3-way-valves
with thermoelectric actuator and ball valve

Water flow regulation kit with ON-OFF 3-way-valves with thermoelectric actuator.
The kit includes the connection pipes and the ball valves.



ON-OFF 2-way-valves
with thermoelectric actuator and ball valve

Water flow regulation kit with ON-OFF 2-way-valves with thermoelectric actuator.
The kit includes the connection pipes and the ball valves.

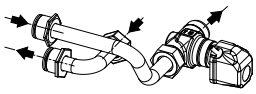


ON-OFF 3-way-valves
with thermoelectric actuator and simplified kit

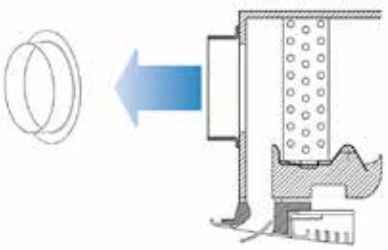
Water flow regulation kit with ON-OFF 3-way-valves with thermoelectric actuator.
The kit includes the connection pipes.

ON-OFF 2-way-valves
with thermoelectric actuator and simplified kit

Water flow regulation kit with ON-OFF 2-way-valves with thermoelectric actuator.
The kit includes the connection pipes.

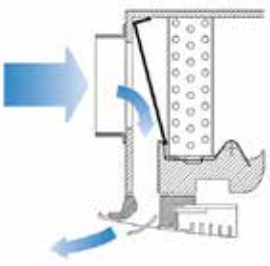


CDA **Air distribution connection**



PRT **Fresh air kit**

This is used to introduce fresh air into the environment directly through the diffuser.



PM-SK **Fitted condensate pump**
with higher pressure head

Electronic wall controls

SK-ECM version	
WM-AU	Automatic 3 speed progressive switch with electronic thermostat and summer/winter switch. (to be used with UPM-AU or with UP AU only)
T-MB2	Wall control with LCD color display and WiFi (to be used with UPM-AU or with UP-AU only)
WM-503-AC-EC	Automatic speed control with electronic thermostat to be mounted in the 503 box (to be used with UP-503-AC-EC only)
WM-S-ECM	Control with automatic continuous speed control, with electronic thermostat, summer/winter switch and LCD display
UPM-AU	UP-AU power unit for WM-AU e T-MB2 remote controls, fitted on the unit
UP-AU	UP-AU power unit for WM-AU e T-MB2 remote controls, not fitted on the unit
UP-503-AC-EC	UP-503-AC-EC power unit for WM-503-AC-EC remote control, not fitted on the unit

Electronic controls

SK-ECM-MB version	
T-MB2	Wall control with LCD color display and WiFi (to be used with SK-ECM-MB version only)
RT03 / RR03	Infra-red remote control with separate packaging (to be used with SK-ECM-MB version only)
RT04	Infra-red remote control supplied with separate packaging (to be used with MB board only) - **Available from April 2025**
PSM-DI	PSM-DI multifunction control panel (to be used with SK-ECM-MB version only)
T-DI	T-DI touch screen multifunction control panel (to be used with SK-ECM-MB version only)
SabWeb	Web gateway for Sabiana Cloud (to be used with SK-ECM-MB version only)
WM-NTC	NTC probe with infra-red receiver (to be used with SK-ECM-MB version only)

Hardware/software supervisory system for a network of more Fan Coil units	
Sabianet	Sabianet (to be used with SK-ECM-MB version only)
Router-S	Router for Sabianet (default) or for BMS systems, not provided by Sabiana
SIOS	8 relay output board for Sabianet

NOTE: All the Controls and the principal Accessories are described in detail at the dedicated pages.

Carisma Coanda

One Way Cassette Fan Coil Unit with Asynchronous Motor

The **Carisma Coanda** one way Cassette fan coil units are available in **3 sizes**.

Thanks to the particular air handling section, the units generate an airflow **with a "coanda" effect**.

The unit is suitable for installation in a suspended ceiling.

Air intake is from the bottom while the air supply is parallel to the ceiling, through practical and functional intake and outlet grids.

The "coanda" effect creates **excellent circulation of the air** inside the room.

Every unit can be supplied with 1 coil (2 pipe system) and possibly an electric heating element, or with 2 coils (4 pipe system) with one or two rows heating coil, for low temperature hot water.
Fresh air may be mixed with room air.

A **condensate pump** may also be supplied as an accessory.

In addition to the conventional temperature and speed control systems, there is also the possibility of **automatic** speed selection and to control operation of each unit through a single remote control with central supervisor software installed on a PC **(called Sabianet)**.

Casing: made from 1 mm galvanized steel insulated with 6 mm polyolefin (PO) foam (B-s2-d0 EN 13501-1).

Diffuser with intake grid: in prepainted metal sheet in RAL 9003 colour with intake grid that can be opened for inspection and maintenance of the air filter.

Air filter: polypropylene cellular fabric regenerating filter.

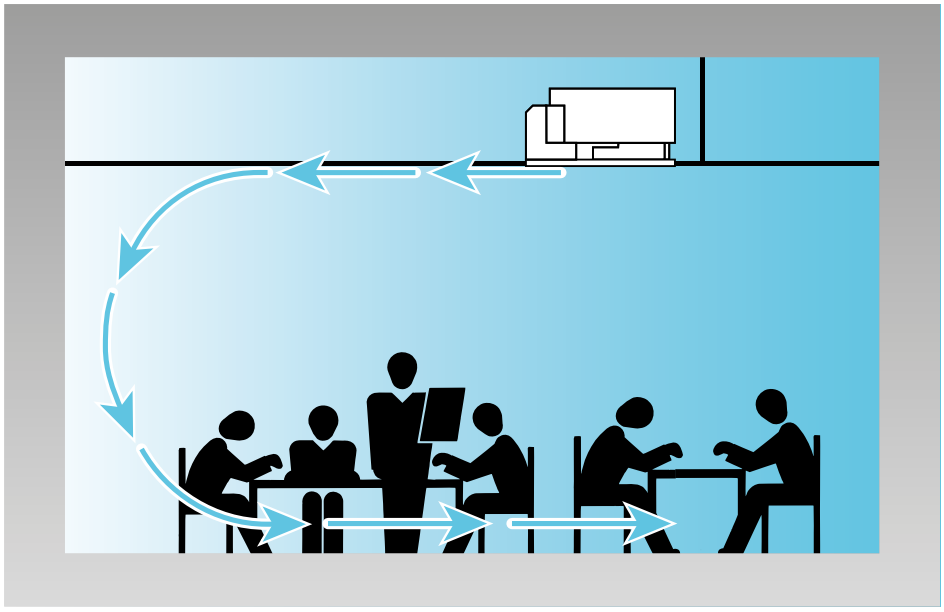
Fan assembly: the fans have aluminium or plastic blades directly keyed on the motor with double aspiration and they are dynamically and statically balanced during manufacture in order to have an extremely quiet operation.

Electric motor: the motor is wired for single phase and has **six speeds, three of which are connected**, with capacitor. The motor is fitted on sealed for life bearings and is secured on anti-vibration and self-lubricating mountings. Internal thermal protection with automatic reset, protection IP 20, class B.

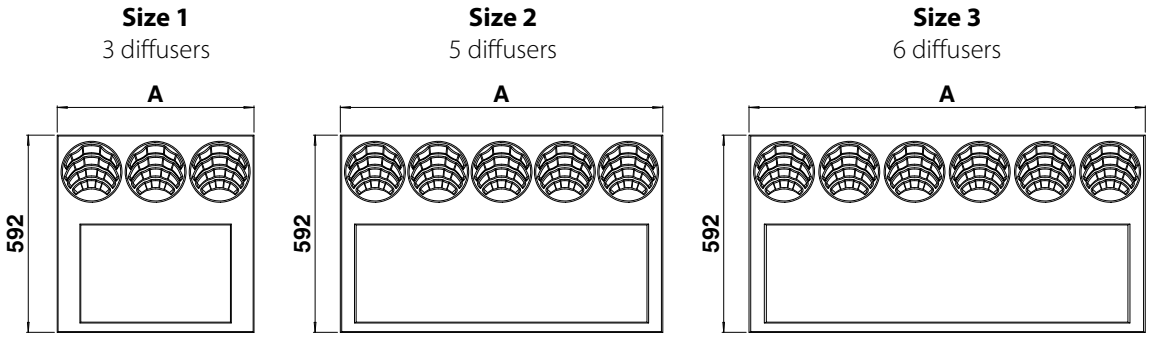
Coil: it is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process.
The coil has two 1/2 inch BSP internal connections and 1/8 inch BSP air vent and drain.
The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.
The connection side cannot be changed on site.

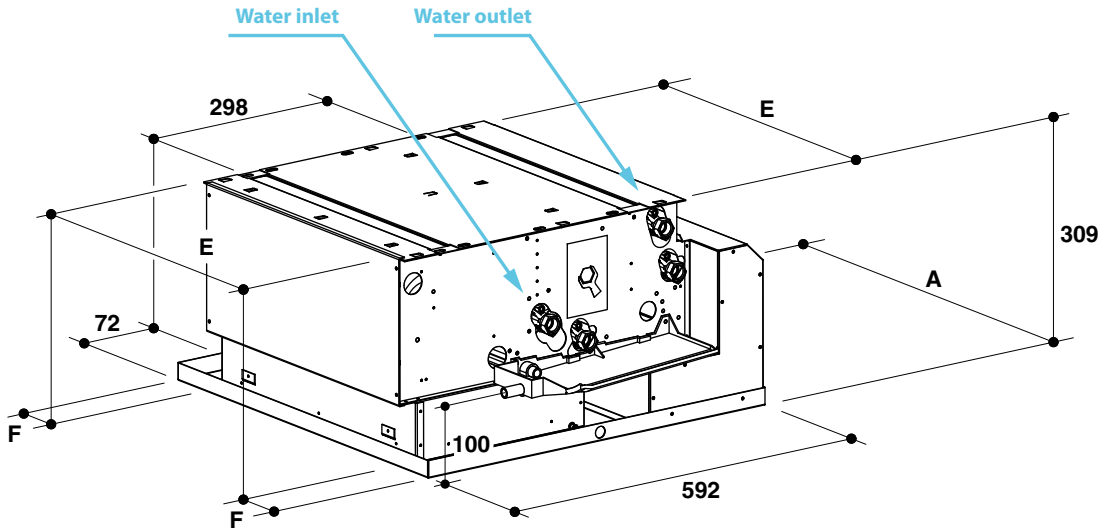
Condensate collection tray: made from plastic with an **"L"**-shape fitted on the inner casing; the tray is insulated with 3 mm polyolefin (PO) foam (B-s2-d0 EN 13501-1).
The outside diameter of the condensate discharge pipe is 15 mm

Round diffuser: the units are supplied with round diffusers suitably designed to generate an airflow with "coanda" effect.
The direction of diffuser air flow can be adjusted on site.



The "coanda" effect creates excellent circulation of the air inside the room.





Dimension (mm)

Model	1	2	3
A	592	970	1192
E	454	884	1099
F	78,0	43,0	46,5
W	750	1130	1350

Weight (kg)

	Model	Weight with packaging			Weight without packaging		
		1	2	3	1	2	3
ROWS	**3**	18	34	44	16	33	42
	3+1	20	40	51	19	38	48
	3+2	23	46	58	22	43	54
	4	20	37	48	18	35	45
	4+1	23	42	54	21	40	51

Water content (litres)

	Model	1	2	3
ROWS	**3**	0,6	1,3	1,7
	4	0,8	1,7	2,4
	+1	0,2	0,4	0,5
	+2	0,4	0,8	1,0

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Units with 3 and 4 row coil

2 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

HEATING (winter mode)
Entering air temperature: +20 °C
Water temperature: +45 °C E.W.T. +40 °C L.W.T.

Model		CCN 13						CCN 23						CCN 33					
Speed		1 **(E)**	2 **(E)**	3	4	5 **(E)**	6	1 **(E)**	2 **(E)**	3	4 **(E)**	5	6	1 **(E)**	2	3 **(E)**	4 **(E)**	5	6
		MIN	**MED**			**MAX**		**MIN**	**MED**		**MAX**			**MIN**		**MED**	**MAX**		
Air flow	m^3/h	**140**	**180**	220	245	**280**	305	**200**	**240**	305	**380**	470	560	**290**	360	**440**	**540**	620	680
Cooling total emission **(E)**	kW	**0,86**	**1,04**	1,23	1,32	**1,45**	1,54	**1,35**	**1,59**	1,94	**2,33**	2,75	3,15	**1,94**	2,34	**2,80**	**3,28**	3,68	3,97
Cooling sensible emission **(E)**	kW	**0,64**	**0,79**	0,95	1,02	**1,13**	1,21	**0,98**	**1,16**	1,43	**1,73**	2,07	2,40	**1,41**	1,71	**2,07**	**2,45**	2,76	2,99
Heating **(E)**	kW	**0,91**	**1,12**	1,34	1,45	**1,62**	1,75	**1,33**	**1,59**	1,96	**2,38**	2,86	3,29	**1,91**	2,32	**2,80**	**3,34**	3,77	4,07
Heating - Water 70-60 °C	kW	**1,84**	**2,26**	2,71	2,94	**3,29**	3,54	**2,68**	**3,20**	3,95	**4,79**	5,77	6,64	**3,85**	4,67	**5,65**	**6,73**	7,61	8,20
Dp Cooling **(E)**	kPa	**2,9**	**4,0**	5,4	6,1	**7,7**	8,6	**2,9**	**3,9**	5,5	**7,6**	10,3	13,1	**7,7**	10,6	**14,5**	**19,4**	23,5	27,0
Dp Heating **(E)**	kPa	**2,8**	**4,0**	5,5	6,3	**7,5**	8,5	**2,3**	**3,1**	4,5	**6,4**	8,8	11,3	**5,1**	7,1	**9,9**	**13,5**	16,8	19,1
Fan **(E)**	W	**16**	**22**	32	38	**49**	66	**24**	**27**	34	**44**	57	71	**27**	33	**42**	**59**	72	84
Sound power **(E)**	dB(A)	**35**	**41**	46	49	**52**	55	**33**	**36**	42	**48**	54	57	**35**	41	**46**	**52**	55	57
Sound pressure **(*)**	dB(A)	**26**	**32**	37	40	**43**	46	**24**	**27**	33	**39**	45	48	**26**	32	**37**	**43**	46	48

Model		CCN 14						CCN 24						CCN 34					
Speed		1 **(E)**	2 **(E)**	3	4	5 **(E)**	6	1 **(E)**	2 **(E)**	3	4 **(E)**	5	6	1	2 **(E)**	3	4 **(E)**	5 **(E)**	6
		MIN	**MED**			**MAX**		**MIN**	**MED**		**MAX**				**MIN**		**MED**	**MAX**	
Air flow	m^3/h	**140**	**180**	220	245	**280**	305	**200**	**240**	305	**380**	470	560	290	**360**	440	**540**	**620**	680
Cooling total emission **(E)**	kW	**0,95**	**1,17**	1,40	1,52	**1,69**	1,80	**1,42**	**1,69**	2,09	**2,53**	3,03	3,51	2,02	**2,46**	2,96	**3,50**	**3,95**	4,28
Cooling sensible emission **(E)**	kW	**0,69**	**0,86**	1,04	1,13	**1,26**	1,36	**1,02**	**1,21**	1,51	**1,84**	2,22	2,59	1,45	**1,78**	2,15	**2,57**	**2,91**	3,17
Heating **(E)**	kW	**0,95**	**1,18**	1,43	1,56	**1,74**	1,88	**1,41**	**1,69**	2,12	**2,60**	3,17	3,71	1,97	**2,40**	2,92	**3,40**	**3,97**	4,33
Heating - Water 70-60 °C	kW	**1,92**	**2,37**	2,89	3,14	**3,52**	3,80	**2,82**	**3,40**	4,25	**5,22**	6,37	7,46	3,96	**4,83**	5,87	**7,04**	**8,00**	8,72
Dp Cooling **(E)**	kPa	**4,7**	**6,6**	9,2	10,6	**12,9**	14,6	**4,4**	**6,0**	8,6	**12,1**	16,8	21,7	4,7	**6,7**	9,3	**12,6**	**15,5**	17,9
Dp Heating **(E)**	kPa	**3,7**	**5,4**	7,7	8,9	**10,8**	12,4	**3,5**	**4,9**	7,2	**10,4**	14,7	19,4	3,7	**5,3**	7,4	**10,2**	**12,7**	14,8
Fan **(E)**	W	**16**	**22**	32	38	**49**	66	**24**	**27**	34	**44**	57	71	27	**33**	42	**59**	**72**	84
Sound power **(E)**	dB(A)	**35**	**41**	46	49	**52**	55	**33**	**36**	42	**48**	54	57	35	**41**	46	**52**	**55**	57
Sound pressure **(*)**	dB(A)	**26**	**32**	37	40	**43**	46	**24**	**27**	33	**39**	45	48	26	**32**	37	**43**	**46**	48

(E) = EUROVENT certified performance. **MIN-MED-MAX** = Standard connected speeds.
(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

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Units with 1 row additional coil

4 pipe units The following standard rating conditions are used:

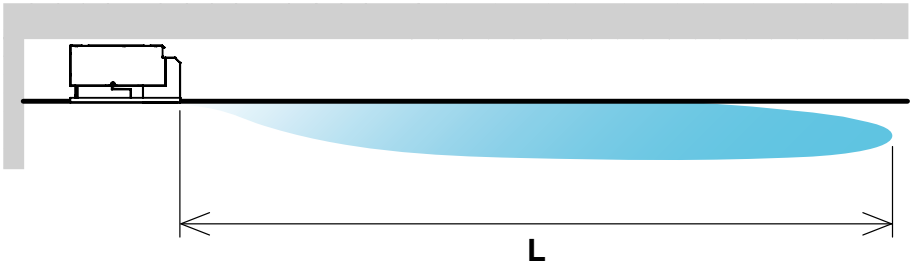
COOLING (summer mode)
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

HEATING (winter mode)
Entering air temperature: +20 °C
Water temperature: +65 °C E.W.T. +55 °C L.W.T.

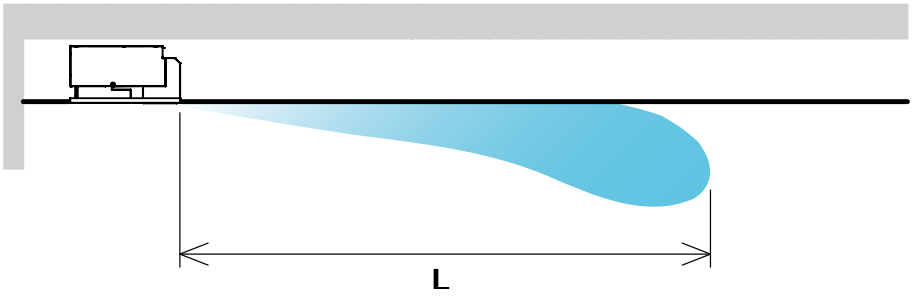
Model		CCN 13+1						CCN 23+1						CCN 33+1					
Speed		1 (E)	2 (E)	3	4	5 (E)	6	1 (E)	2 (E)	3	4 (E)	5	6	1 (E)	2	3 (E)	4 (E)	5	6
		MIN	MED			MAX		MIN	MED		MAX			MIN		MED	MAX		
Air flow	m^3/h	**140**	**180**	220	245	**280**	305	**200**	**240**	305	**380**	470	560	**290**	360	**440**	**540**	620	680
Cooling total emission (E)	kW	**0,86**	**1,04**	1,23	1,32	**1,45**	1,54	**1,35**	**1,59**	1,94	**2,33**	2,75	3,15	**1,94**	2,34	**2,80**	**3,28**	3,68	3,97
Cooling sensible emission (E)	kW	**0,64**	**0,79**	0,95	1,02	**1,13**	1,21	**0,98**	**1,16**	1,43	**1,73**	2,07	2,40	**1,41**	1,71	**2,07**	**2,45**	2,76	2,99
Heating (E)	kW	**0,81**	**0,95**	1,10	1,17	**1,28**	1,36	**1,31**	**1,50**	1,77	**2,06**	2,39	2,69	**1,86**	2,17	**2,52**	**2,89**	3,19	3,41
Dp Cooling (E)	kPa	**3,6**	**5,0**	6,7	7,7	**9,1**	10,3	**2,9**	**3,9**	5,5	**7,6**	10,3	13,1	**7,7**	10,6	**14,5**	**19,4**	23,5	27,0
Dp Heating (E)	kPa	**1,3**	**1,7**	2,2	2,5	**2,9**	3,2	**0,7**	**0,9**	1,3	**1,6**	2,1	2,6	**3,1**	4,1	**5,2**	**6,8**	7,9	8,8
Fan (E)	W	**16**	**22**	32	38	**49**	66	**24**	**27**	34	**44**	57	71	**27**	33	**42**	**59**	72	84
Sound power (E)	dB(A)	**35**	**41**	46	49	**52**	55	**33**	**36**	42	**48**	54	57	**35**	41	**46**	**52**	55	57
Sound pressure (*)	dB(A)	**26**	**32**	37	40	**43**	46	**24**	**27**	33	**39**	45	48	**26**	32	**37**	**43**	46	48

(E) = EUROVENT certified performance. **MIN-MED-MAX** = Standard connected speeds.
(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

C1 heating



C2 cooling



Model		CCN 1	CCN 2	CCN 3
Installation height (m)	**Min.**	2,6	2,6	2,6
	Max.	3,2	3,2	3,5

Model		CCN 1						CCN 2						CCN 3					
Speed		1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
Air throw **L** (m)	**C1**	3,6	4,5	5,8	6,3	6,8	7,2	4	5	6,1	7	8	9	4,5	5,2	6,3	7,5	8,8	9,5
	C2	3	3,6	4,6	5	5,4	5,7	3,2	4	4,8	5,6	6,4	7,2	3,6	4,1	5	6	7	7,6

Electronic wall controls

WM-3V	3 speed control
WM-T	3 speed control with electronic thermostat and manual summer/winter switch
WM-TQR	3 speed control with electronic thermostat and centralized/manual summer/winter switch
WM-AU	Automatic speed control with electronic thermostat and summer/winter switch (to be used with UPM-AU or UP-AU only)
T-MB2	Wall control with LCD color display and WiFi (to be used with UPM-AU or UP-AU only)
WM-503-AC-EC	Automatic speed control with electronic thermostat to be mounted in the 503 box (to be used with UP-503-AC-EC only)
T2T	Electromechanical thermostat with summer/winter switch (only for 2 pipe units)
UPM-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, fitted on the unit
UP-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, not fitted on the unit
UP-503-AC-EC	UP-503-AC-EC power unit for WM-503-AC-EC remote control, not fitted on the unit

Electronic controls for MB boards

MB-M	MB electronic board fitted on the unit
MB-S	MB electronic board supplied with separate packaging
T-MB2	Wall control with LCD color display and WiFi (to be used with MB board only)
RS-RT03	Infra-red remote control with receiver supplied with separate packaging (to be used with MB board only)
RT03 / RR03	Infra-red remote control supplied with separate packaging (to be used with MB board only)
RT04	Infra-red remote control supplied with separate packaging (to be used with MB board only) - **Available from April 2025**
RS	Receiver for infra-red remote control supplied with separate packaging (to be used with MB board only)
PSM-DI	PSM-DI multifunction control panel (to be used with MB board only)
T-DI	T-DI touch screen multifunction control panel (to be used with MB board only)
SabWeb	Web gateway for Sabiana Cloud (to be used with MB board only)

Sabianet management system for a network of fan coils	
Sabianet	Sabianet (to be used with MB board only)
Router-S	Router for Sabianet (default) or for BMS systems not provided by Sabiana
SIOS	Relay output board for Sabianet

Controls for KNX systems

KNX systems	
WM-KNX	Wall control with electronic thermostat and summer/winter switch (to be used with UP-KNX and PL mounting plate only)
UP-KNX	UP-KNX power unit supplied with separate packaging
PL-503-B	Mounting plate for rectangular box
PL-QUA-B	Mounting plate for rectangular box

NOTE: for more information about Controls and for full list of main Accessories, please see the dedicated pages.

Carisma Coanda-ECM

One Way Cassette Fan Coil Unit with EC Brushless Electronic Motor and Inverter Board

The **Carisma Coanda-ECM** one way Cassette fan coil units are available in **3 sizes**.
Thanks to the particular air handling section, the units generate an airflow **with a "coanda" effect**.

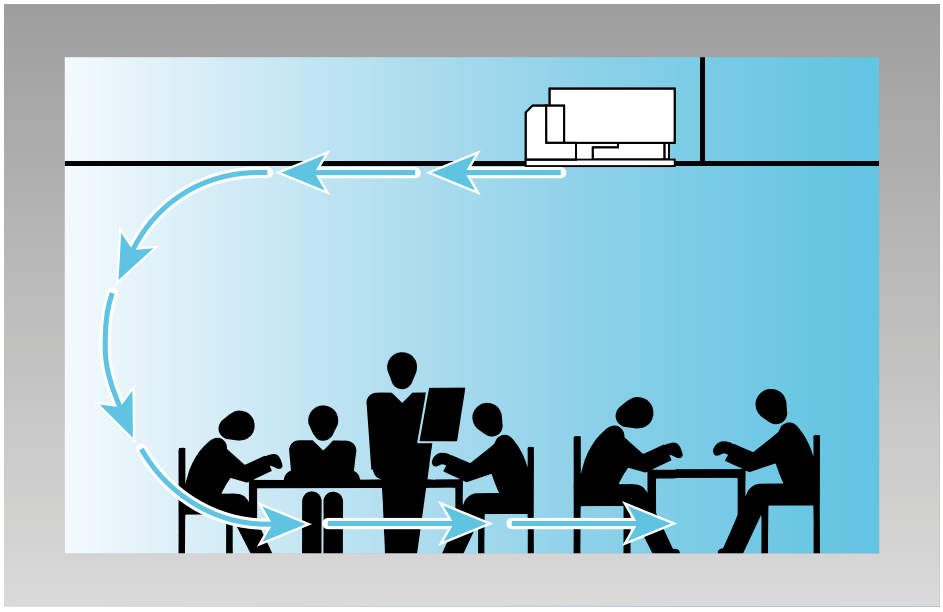
The variable flow rate enhances the product's main virtues: **excellent air circulation**, with a high degree of comfort, especially during the summer months.

Every unit is supplied with an electronic motor with extremely low energy consumption, **brushless** and **sensorless** type, controlled by an inverter board.
By continuously varying the air flow, the ambient temperature can be more precisely monitored and regulated, **saving over 50%** of the electricity used and reducing the average perceived noise level.

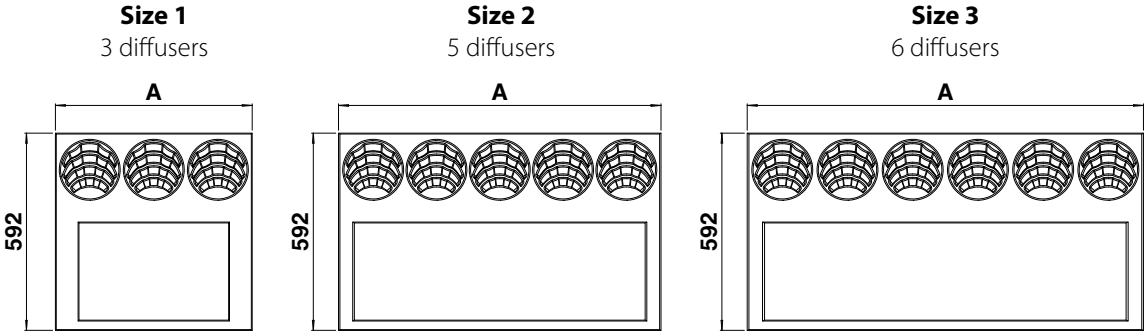
Every unit can be supplied with 1 coil (2 pipe system) and possibly an electric heating element, or with 2 coils (4 pipe system) with one or two rows heating coil, for low temperature hot water.
Fresh air may be mixed with room air.
A **condensate pump** may also be supplied as an accessory.

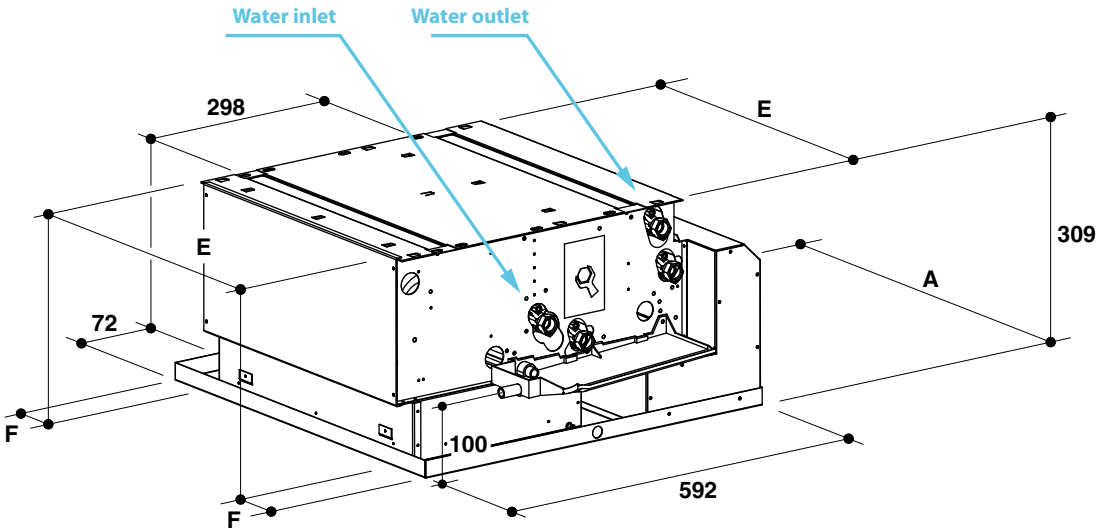
In addition to the conventional temperature and speed control systems, there is also the possibility to **control operation** of each unit through a single remote control with central supervisor software installed on a PC **(called Sabianet)**.

For the technical characteristics of the various components refer to Carisma COANDA Fan Coil Unit, except for Electronic motor:
Three phase permanent magnet brushless electronic motor that is controlled with current reconstructed according to a **BLAC** sinusoidal wave.
The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a **switching system**, it generates a three-phase frequency modulated, wave form power supply.
The electric power supply required for the machine is therefore single-phase with voltage of **230 V** and frequency of **50 - 60 Hz**.



The "coanda" effect creates excellent circulation of the air inside the room.





Dimension (mm)

Model	1	2	3
A	592	970	1192
E	454	884	1099
F	78,0	43,0	46,5
W	750	1130	1350

Weight (kg)

		Weight with packaging			Weight without packaging		
Model		1	2	3	1	2	3
ROWS	**3**	18	34	44	16	33	42
	3+1	20	40	51	19	38	48
	3+2	23	46	58	22	43	54
	4	20	37	48	18	35	45
	4+1	23	42	54	21	40	51

Water content (litres)

Model		1	2	3
ROWS	**3**	0,6	1,3	1,7
	4	0,8	1,7	2,4
	+1	0,2	0,4	0,5
	+2	0,4	0,8	1,0

www.eurovent-certification.com

Units with 3 and 4 row coil

2 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

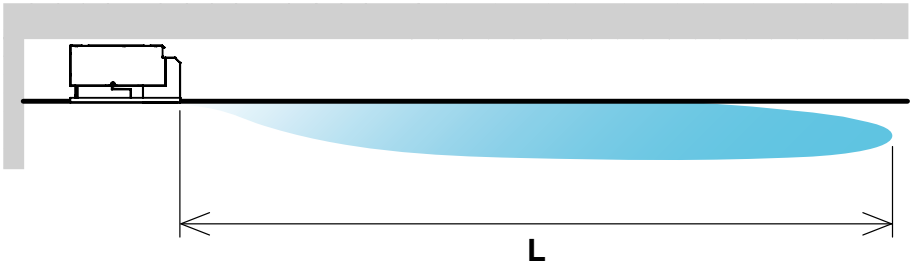
HEATING (winter mode)
Entering air temperature: +20 °C
Water temperature: +45 °C E.W.T. +40 °C L.W.T

Model		CCN-ECM 13					CCN-ECM 23					CCN-ECM 33				
Inverter Power **(V)**		1 **(E)**	3	5 **(E)**	7,5	10 **(E)**	1 **(E)**	3	5 **(E)**	7,5	10 **(E)**	1 **(E)**	3	5 **(E)**	7,5	10 **(E)**
Speed		**MIN**		**MED**		**MAX**	**MIN**		**MED**		**MAX**	**MIN**		**MED**		**MAX**
Air flow	m^3/h	**130**	165	**205**	250	**295**	**215**	295	**370**	450	**540**	**275**	345	**430**	525	**620**
Cooling total emission **(E)**	kW	**0,81**	0,99	**1,17**	1,35	**1,53**	**1,45**	1,90	**2,29**	2,71	**3,12**	**1,86**	2,30	**2,76**	3,25	**3,71**
Cooling sensible emission **(E)**	kW	**0,61**	0,75	**0,90**	1,05	**1,21**	**1,06**	1,41	**1,71**	2,05	**2,37**	**1,36**	1,69	**2,04**	2,42	**2,79**
Heating **(E)**	kW	**0,85**	1,05	**1,26**	1,47	**1,70**	**1,43**	1,90	**2,32**	2,78	**3,21**	**1,82**	2,26	**2,74**	3,27	**3,77**
Heating - Water 70-60 °C	kW	**1,72**	2,12	**2,54**	2,98	**3,44**	**2,88**	3,82	**4,67**	5,60	**6,49**	**3,65**	4,54	**5,53**	6,59	**7,61**
Dp Cooling **(E)**	kPa	**2,1**	3,0	**4,0**	5,2	**6,5**	**3,2**	5,2	**7,3**	9,8	**12,6**	**5,8**	8,4	**11,7**	15,7	**19,8**
Dp Heating **(E)**	kPa	**1,9**	2,7	**3,7**	4,9	**6,4**	**2,6**	4,3	**6,1**	8,4	**10,9**	**4,6**	6,8	**9,6**	13,0	**16,8**
Fan **(E)**	W	**8**	11	**14**	21	**29**	**8**	11	**16**	24	**37**	**10**	13	**19**	29	**42**
Sound power **(E)**	dB(A)	**35**	41	**46**	51	**55**	**34**	40	**46**	52	**56**	**36**	42	**48**	54	**58**
Sound pressure **(*)**	dB(A)	**26**	32	**37**	42	**46**	**25**	31	**37**	43	**47**	**27**	33	**39**	45	**49**

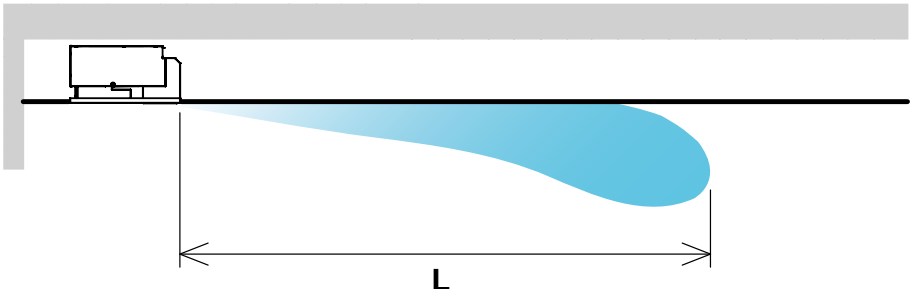
Model		CCN-ECM 14					CCN-ECM 24					CCN-ECM 34				
Inverter Power **(V)**		1 **(E)**	3	5 **(E)**	7,5	10 **(E)**	1 **(E)**	3	5 **(E)**	7,5	10 **(E)**	1 **(E)**	3	5 **(E)**	7,5	10 **(E)**
Speed		**MIN**		**MED**		**MAX**	**MIN**		**MED**		**MAX**	**MIN**		**MED**		**MAX**
Air flow	m^3/h	**130**	165	**205**	250	**295**	**215**	295	**370**	450	**540**	**275**	345	**430**	525	**620**
Cooling total emission **(E)**	kW	**0,90**	1,11	**1,33**	1,55	**1,78**	**1,54**	2,04	**2,49**	2,98	**3,46**	**1,94**	2,41	**2,92**	3,46	**3,98**
Cooling sensible emission **(E)**	kW	**0,66**	0,81	**0,98**	1,16	**1,35**	**1,11**	1,48	**1,82**	2,19	**2,56**	**1,40**	1,75	**2,13**	2,54	**2,94**
Heating **(E)**	kW	**0,89**	1,10	**1,34**	1,58	**1,85**	**1,52**	2,05	**2,53**	3,07	**3,62**	**1,87**	2,34	**2,85**	3,42	**3,97**
Heating - Water 70-60 °C	kW	**1,78**	2,22	**2,68**	3,19	**3,69**	**3,04**	4,11	**5,08**	6,17	**7,27**	**3,75**	4,70	**5,74**	6,89	**8,00**
Dp Cooling **(E)**	kPa	**4,1**	5,9	**8,1**	10,9	**13,9**	**5,0**	8,2	**11,6**	15,9	**20,8**	**4,3**	6,4	**8,9**	12,1	**15,5**
Dp Heating **(E)**	kPa	**3,3**	4,8	**6,7**	9,2	**11,8**	**4,0**	6,8	**9,9**	13,9	**18,5**	**3,4**	5,0	**7,1**	9,8	**12,7**
Fan **(E)**	W	**8**	11	**14**	21	**29**	**8**	11	**16**	24	**37**	**10**	13	**19**	29	**42**
Sound power **(E)**	dB(A)	**35**	41	**46**	51	**55**	**34**	40	**46**	52	**56**	**36**	42	**48**	54	**58**
Sound pressure **(*)**	dB(A)	**26**	32	**37**	42	**46**	**25**	31	**37**	43	**47**	**27**	33	**39**	45	**49**

(E) = EUROVENT certified performance.
(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

C1 heating



C2 cooling



Model		CCN-ECM 1	CCN-ECM 2	CCN-ECM 3
Installation height (m)	**Min.**	2,6	2,6	2,6
	Max.	3,2	3,2	3,5

Model		CCN-ECM 1						CCN-ECM 2						CCN-ECM 3					
Speed		1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
Air throw **L** (m)	**C1**	3,6	4,5	5,8	6,3	6,8	7,2	4	5	6,1	7	8	9	4,5	5,2	6,3	7,5	8,8	9,5
	C2	3	3,6	4,6	5	5,4	5,7	3,2	4	4,8	5,6	6,4	7,2	3,6	4,1	5	6	7	7,6

Electronic wall controls

WM-AU	Automatic speed control with electronic thermostat and summer/winter switch (to be used with UPM-AU or UP-AU only)
T-MB2	Wall control with LCD color display and WiFi (to be used with UPM-AU or UP-AU only)
WM-503-AC-EC	Automatic speed control with electronic thermostat to be mounted in the 503 box (to be used with UP-503-AC-EC only)
WM-S-ECM	Continuous fan speed control with electronic thermostat, summer/winter switch and liquid crystal display
UPM-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, fitted on the unit
UP-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, not fitted on the unit
UP-503-AC-EC	UP-503-AC-EC power unit for WM-503-AC-EC remote control, not fitted on the unit

Electronic controls for MB boards

MB-ECM-M	MB electronic board fitted on the unit
MB-ECM-S	MB electronic board supplied with separate packaging
T-MB2	Wall control with LCD color display and WiFi (to be used with MB board only)
RS-RT03	Infra-red remote control with receiver supplied with separate packaging (to be used with MB board only)
RT03 / RR03	Infra-red remote control supplied with separate packaging (to be used with MB board only)
RT04	Infra-red remote control supplied with separate packaging (to be used with MB board only) - **Available from April 2025**
RS	Receiver for infra-red remote control supplied with separate packaging (to be used with MB board only)
PSM-DI	PSM-DI multifunction control panel (to be used with MB board only)
T-DI	T-DI touch screen multifunction control panel (to be used with MB board only)
SabWeb	Web gateway for Sabiana Cloud (to be used with MB board only)

Sabianet management system for a network of fan coils	
Sabianet	Hardware/software supervisory system (to be used with MB board only)
Router-S	Router for Sabianet (default) or for BMS systems not provided by Sabiana
SIOS	Relay output board for Sabianet

Controls for KNX system

KNX Systems	
WM-KNX	Wall control with electronic thermostat and summer/winter switch (to be used with UP-KNX and PL mounting plate only)
UP-KNX	UP-KNX power unit supplied with separate packaging
PL-503-B	Mounting plate for rectangular box
PL-QUA-B	Mounting plate for rectangular box

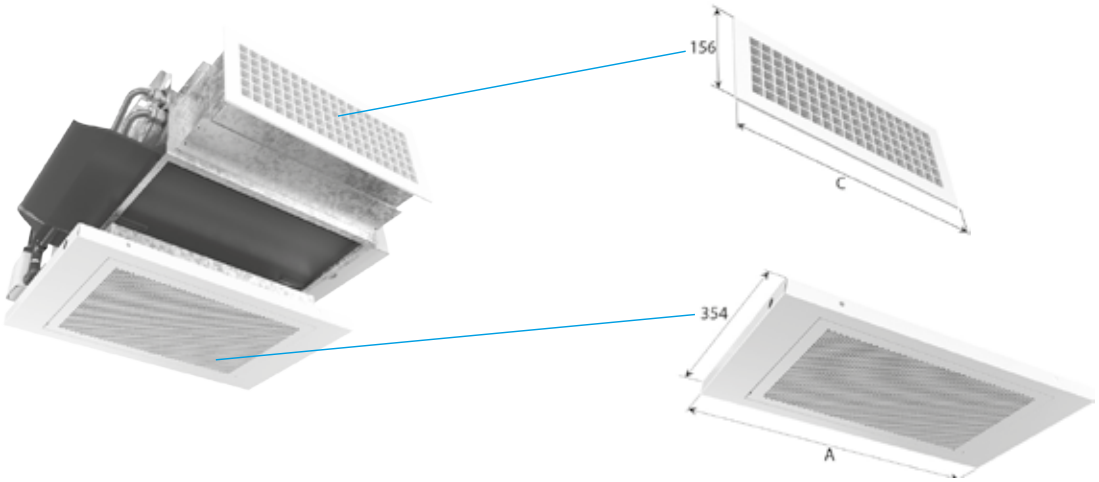
NOTE: for more information about Controls and for full list of main Accessories, please see the dedicated pages.

Main components

The variants CCN-H / CCN-ECM-H are available with low air intake grid and frontal air outled grid fitted on a plenum. The emissions of these versions are the same as the corresponding Coanda standard versions. It is but possible to extract the air from an indoor ambient and enter it into another ambient.

The CCN-H and CCN-ECM-H versions reproduce the entire range of the CCN / CCN-ECM versions (3 sizes with 3, 4,+1 and + 2 row coils) and they can be used with all the accessories offered in the standard versions.
The -H version includes:

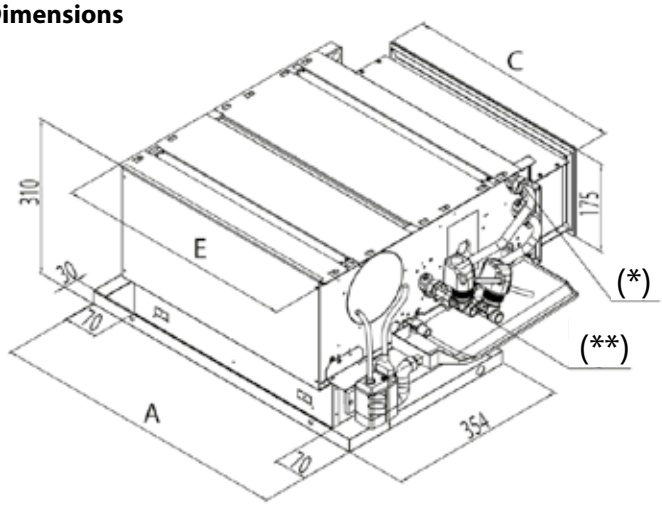
- Basic unit of the standard version
- In prepainted metal sheet in RAL 9003 colour with intake grille
- Frontal telescopic plenum made of galvanized steel 1,0 mm thick extensible from 90 to 150 mm
- Double louvre frontal air outlet grid made of anodized aluiminium, to be fitted directly on the telescopic plenum.

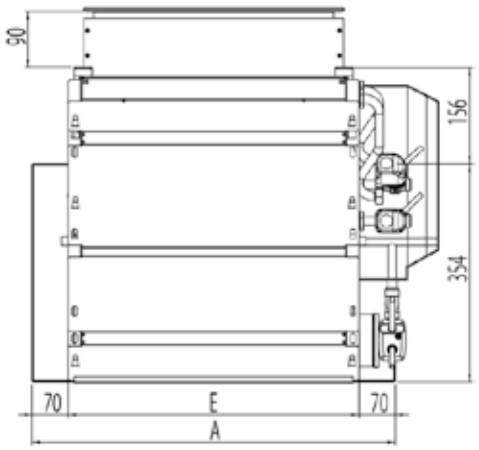


Model		1	2	3
A	mm	592	970	1192
E	mm	454	884	1099
C	mm	425	825	1025

H Variant Dimension and Weight

Dimensions





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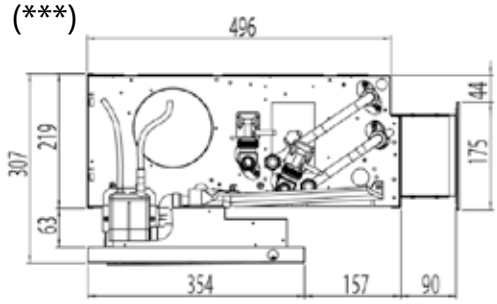

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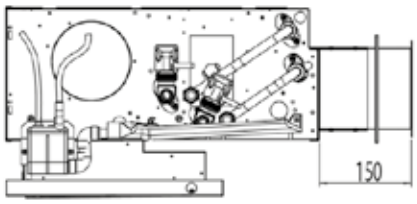


(*) = Water outlet
(**) = Water inlet
(***) = Min. plenum extension
(****) = Max. plenum extension

Weight

Weights with packaging

Model		1	2	3
3 rows	kg	13	29	39
3+1 rows	kg	15	35	46
3+2 rows	kg	18	41	53
4 rows	kg	15	32	43
4+1 rows	kg	18	37	49

Weights without packaging

Model		1	2	3
3 rows	kg	11	28	37
3+1 rows	kg	14	33	43
3+2 rows	kg	17	38	49
4 rows	kg	13	30	40
4+1 rows	kg	16	35	46

The packaging dimensions and the water content are the same as those of the standard version.

Carisma Fly

High Wall Fan Coil Unit with WiFi Connectivity Kit and Bluetooth(*)

Carisma Fly is the high wall fan coil unit **designed and manufactured in Italy** by Sabiana, in 4 sizes and many different models.

Fly is easy to install like a standard fan coil: without decreasing the emission and without any extra frame, 2 way or 3 way valves and condensate pump can be mounted into the casing.

The **modern and appealing** design of the unit in RAL 9003 colour allows the use of Fly in any environment.

Standard AC version is available with wired wall control, infra-red remote control, MB electronic board for Modbus management and electric heating coil.

The **CVP-TA** and **CVP-MBA** units offer moreover the possibility of management via **"Sabiana Wi-Fi"** and **"Sabiana BLE"** APP. This makes this fan coil unit the ideal solution for the air-conditioning of every kind of ambients; the **CVP-MBA** version allows the connection to a ModBus network.

The electronic board is equipped with a microprocessor with BLE / WiFi feature, that allows to control at distance or remotely all the units installed.

With the BLE / WiFi technology it is possible to manage all the fan coil operation modes.

CVP-TS units equipped with remote control and without Wi-fi and Bluetooth connectivity are also available.

The units are for 2 pipe installations only.

All the Fly models perform very low electric consumption and extremely quite sound levels according to the request of today's new projects.

(*) CVP-TA and CVP-MBA versions

Versions: all versions are available without valves, with 2 way valve or with 3 way valve fitted in the unit.
There are four sizes available in the following versions:

Standard models	Models with electric heater
CVP without infra-red remote control and without valve	**CVP-E** without infra-red remote control and without valve
CVP-2V without infra-red remote control with fitted 2 way valve	**CVP-E-2V** without infra-red remote control with fitted 2 way valve
CVP-3V without infra-red remote control with fitted 3 way valve	**CVP-E-3V** without infra-red remote control with fitted 3 way valve
CVP-TA / CVP-TS with infra-red remote control and without valve	**CVP-TA-E** with infra-red remote control and without valve
CVP-TA-2V / CVP-TS-2V with infra-red remote control with fitted 2 way valve	**CVP-TA-E-2V** with infra-red remote control with fitted 2 way valve
CVP-TA-3V / CVP-TS-3V with infra-red remote control with fitted 3 way valve	**CVP-TA-E-3V** with infra-red remote control with fitted 3 way valve.
CVP-MBA with MB board and without valve	**CVP-MBA-E** with MB electronic board and without valve
CVP-MBA-2V with MB board with fitted 2 way valve	**CVP-MBA-E-2V** with MB electronic board with fitted 2 way valve
CVP-MBA-3V with MB board with fitted 3 way valve	**CVP-MBA-E-3V** with MB electronic board with fitted 3 way valve

Casing: made of auto-extinguishing ABS UL94 HB plastic RAL 9003 with high specifications and great resistance to aging. The diffusion flap is adjusted manually (not motorised flap) in CVP version, on the contrary it is adjusted by remote control in CVP-TA version or with T-MB2 wall control in CVP-MBA version (both with motorised flap).

Filter: washable-regenerable synthetic filter, readily accessible.

Fan assembly: made of plastic tangential fan.

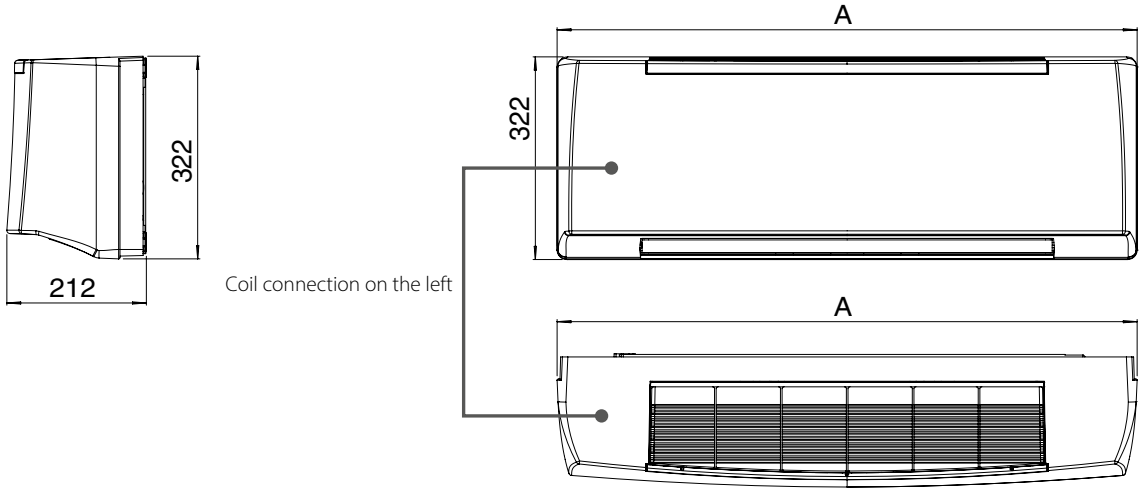
Electric motor: the motor is for single phase supply and has six speeds, three of which are connected, with capacitor.
The motor is fitted on sealed for life bearings and is secured on anti-vibration and self-lubricating mountings.
Internal thermal protection with automatic reset, protection IP 20, class B.
The speeds connected in the factory are indicated by "MIN, MED and MAX" in the following tables.

Coil: it is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process.
The coil has two 1/2 inch BSP internal connections and 1/8 inch BSP air vent and drain.
The heat exchanger is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.
The connections are on the left side facing the unit only.

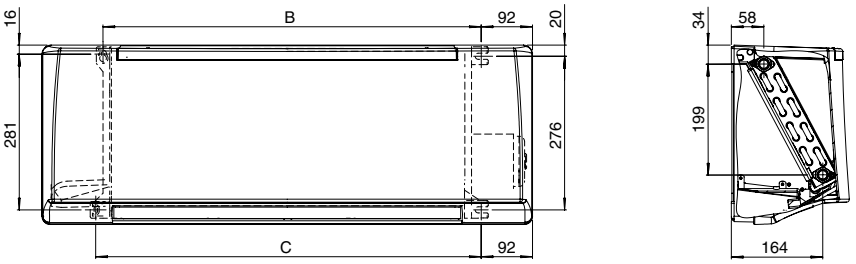
Electric heater (models with electric heater only):
According to the control provided, the electrical heater can be used as an alternative or as a supplement to the hot water.
The heater is hermetically sealed and supplied inside the battery pipes and therefore can be only factory mounted.
The electric heaters of the **Fly** units are single phase 230V supply.

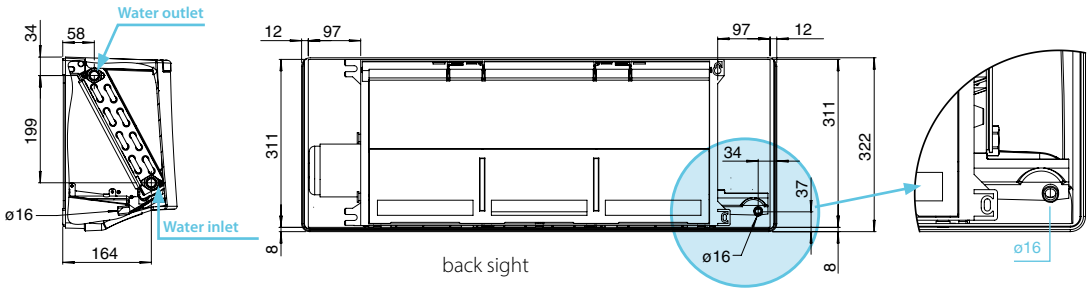
Condensate collection tray: made from polypropylene; the outside diameter of the condensate discharge pipe is 16 mm.

Installation template: a cardboard installation template is supplied with every unit to help the mounting on the wall.



Mounting dimensions





Model	Weight without valves kg	Weight with valves kg	Water content litres	A mm	B mm	C mm
1	10	11	0,85	880	678	691
2	10	11	0,85	880	678	691
3	13	14	1,28	1185	983	996
4	13	14	1,28	1185	983	996

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2 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

HEATING (winter mode)
Entering air temperature: +20°C
Water temperature: +45°C E.W.T. +40°C L.W.T.

Model		1						2					
Speed		1 **(E)**	2 **(E)**	3	4 **(E)**	5	6	1 **(E)**	2	3 **(E)**	4	5 **(E)**	6
		MIN	**MED**		**MAX**			**MIN**		**MED**		**MAX**	
Air flow	m^3/h	**205**	**270**	340	**375**	470	500	**250**	305	**365**	400	**480**	545
Cooling total emission **(E)**	kW	**1,23**	**1,49**	1,74	**1,85**	2,13	2,20	**1,42**	1,62	**1,82**	1,93	**2,16**	2,32
Cooling sensible emission **(E)**	kW	**0,91**	**1,13**	1,34	**1,44**	1,70	1,77	**1,06**	1,23	**1,41**	1,51	**1,73**	1,89
Heating **(E)**	kW	**1,34**	**1,68**	2,02	**2,18**	2,58	2,71	**1,58**	1,85	**2,13**	2,29	**2,62**	2,88
Dp Cooling **(E)**	kPa	**4,8**	**6,8**	9,0	**10,1**	12,9	13,8	**6,2**	7,9	**9,8**	10,8	**13,2**	15,1
Dp Heating **(E)**	kPa	**4,5**	**6,8**	9,4	**10,8**	14,7	15,9	**6,1**	8,1	**10,4**	11,8	**15,1**	17,8
Fan **(E)**	W	**12**	**14**	17	**18**	24	30	**12**	14	**18**	20	**24**	32
Sound power Lw **(E)**	dB(A)	**35**	**41**	46	**48**	52	53	**39**	43	**47**	49	**53**	55
Sound pressure Lp **(*)**	dB(A)	**26**	**32**	37	**39**	43	44	**30**	34	**38**	40	**44**	46

Model		3						4					
Speed		1 **(E)**	2 **(E)**	3	4 **(E)**	5	6	1	2 **(E)**	3	4 **(E)**	5	6 **(E)**
		MIN	**MED**		**MAX**				**MIN**		**MED**		**MAX**
Air flow	m^3/h	**280**	**375**	480	**545**	730	780	300	**440**	500	**610**	675	**790**
Cooling total emission **(E)**	kW	**1,87**	**2,30**	2,75	**3,00**	3,59	3,73	1,97	**2,60**	2,83	**3,23**	3,43	**3,76**
Cooling sensible emission **(E)**	kW	**1,33**	**1,67**	2,03	**2,24**	2,77	2,90	1,41	**1,91**	2,10	**2,44**	2,62	**2,93**
Heating **(E)**	kW	**1,89**	**2,37**	2,93	**3,23**	4,04	4,24	2,00	**2,73**	3,02	**3,53**	3,80	**4,28**
Dp Cooling **(E)**	kPa	**11,2**	**16,2**	22,5	**26,3**	36,4	39,1	14,1	**23,0**	27,2	**34,0**	38,5	**45,1**
Dp Heating **(E)**	kPa	**9,1**	**13,8**	20,1	**24,1**	35,9	39,2	12,7	**22,2**	26,7	**35,2**	40,4	**49,8**
Fan **(E)**	W	**16**	**21**	26	**29**	38	46	17	**23**	27	**32**	35	**48**
Sound power Lw **(E)**	dB(A)	**35**	**40**	45	**51**	55	57	36	**43**	46	**51**	54	**57**
Sound pressure Lp **(*)**	dB(A)	**26**	**31**	36	**42**	46	48	27	**34**	37	**42**	45	**48**

(E) = EUROVENT certified performance. **MIN-MED-MAX** = Standard connected speeds.
(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

Controls for CVP versions

CVP version	
WM-3V	3 speed control
WM-T	3 speed control with electronic thermostat and manual summer/winter switch
WM-TQR	3 speed control with electronic thermostat and centralized/manual summer/winter switch
T2T	Electromechanical thermostat with summer/winter switch (only for 2 pipe units)

Controls for CVP-TA versions

CVP-TA version	
KC-F	Connectivity kit "High Wall Connectivity Kit" (auxiliary board for Modbus connection + auxiliary board for T-MB2 connection)
PSM-DI	PSM-DI multifunction control panel (to be used with connectivity kit only)
T-DI	T-DI touch screen multifunction control panel (to be used with connectivity kit only)
SabWeb	Web gateway for Sabiana Cloud (to be used with connectivity kit only)

Controls for CVP-MBA versions

CVP-MBA version	
T-MB2	Wall control with LCD color display and WiFi
RS-RT03-F	Infra-red remote control with receiver supplied with separate packaging
RT03 / RR03	Infra-red remote control supplied with separate packaging
RT04	Infra-red remote control supplied with separate packaging (to be used with MB board only) - **Available from April 2025**
RS-F	Receiver for infra-red remote control supplied with separate packaging
PSM-DI	PSM-DI multifunction control panel
T-DI	T-DI touch screen multifunction control panel
SabWeb	Web gateway for Sabiana Cloud

Sabianet management system for a network of fan coils	
Sabianet	Hardware/software supervisory system (to be used with CVP-MBA board only)
Router-S	Router for Sabianet (default) or for BMS systems not provided by Sabiana
SIOS	Relay output board for Sabianet

Controls for KNX systems

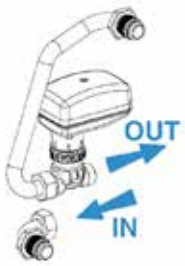
KNX systems	
WM-KNX	Wall control with electronic thermostat and summer/winter switch (to be used with UP-KNX and PL mounting plate only)
UP-KNX	UP-KNX power unit supplied with separate packaging
PL-503-B	Mounting plate for rectangular box
PL-QUA-B	Mounting plate for rectangular box

3 way valve

Control valve kit:
3 way valve, 230V ON-OFF,
with electric motor and mounting kit
with micrometric lockshield valve.

2 way valve

Control valve kit:
2 way valve, ON-OFF,
with electric motor and mounting kit.



Condensate drain pump

Wall or concealed installation kit

NOTE: for more information about Controls and for full list of main Accessories, please see the dedicated pages.

Carisma Fly-ECM

High Wall Fan Coil Unit with WiFi Connectivity Kit and Bluetooth(*) (EC Brushless Electronic Motor and Inverter Board)

Carisma Fly is the high wall fan coil unit **designed and manufactured in Italy** by Sabiana, in 5 sizes and many different models.

Fly is easy to install like a standard fan coil: without decreasing the emission and without any extra frame, 2 way or 3 way valves and condensate pump can be mounted into the casing.

The **modern and appealing** design of the unit in RAL 9003 colour allows the use of Fly in any environment.

Fly is **available with low energy EC motors** and in the following versions:

with infra-red remote control, MB electronic board for Modbus management and electric heating coil.

The **CVP-ECM-TA** and **CVP-ECM-MBA** units offer moreover the possibility of management via **"Sabiana Wi-Fi"** and **"Sabiana BLE"** APP. This makes this fan coil unit the ideal solution for the air-conditioning of every kind of ambients; the **CVP-ECM-MBA** version allows the connection to a ModBus network.

The electronic board is equipped with a microprocessor with BLE / WiFi feature, that allows to control at distance or remotely all the units installed.

With the BLE / WiFi technology it is possible to manage all the fan coil operation modes.

CVP-ECM-TS units equipped with remote control and without Wi-fi and Bluetooth connectivity are also available.

The units are for 2 pipe installations only.

All the Fly models perform very low electric consumption and extremely quite sound levels according to the request of today's new projects.

(*) CVP-ECM-TA and CVP-ECM-MBA versions.

Versions: all versions are available without valves, with 2 way valve or with 3 way valve fitted in the unit.
There are five sizes available in the following versions:

Standard versions	Versions with electronic heater
CVP-ECM-A without infra-red remote control and without valve	**CVP-ECM-E** without infra-red remote control and without valve
CVP-ECM-A-2V without infra-red remote control with fitted 2 way valve;	**CVP-ECM-E-2V** without infra-red remote control with fitted 2 way valve
CVP-ECM-A-3V without infra-red remote control with fitted 3 way valve	**CVP-ECM-E-3V** without infra-red remote control with fitted 3 way valve
CVP-ECM-TA / CVP-ECM-TS with infra-red remote control and without valve	**CVP-ECM-T-E** with infra-red remote control and without valve
CVP-ECM-TA-2V / CVP-ECM-TS-2V with MB board with fitted 2 way valve	**CVP-ECM-T-E-2V** with infra-red remote control with fitted 2 way valve
CVP-ECM-TA-3V / CVP-ECM-TS-3V with infra-red remote control with fitted 3 way valve	**CVP-ECM-T-E-3V** with infra-red remote control with fitted 3 way valve
CVP-ECM-MBA with MB board and without valve	**CVP-ECM-MB-E** with MB electronic board and without valve
CVP-ECM-MBA-2V with MB board with fitted 2 way valve	**CVP-ECM-MB-E-2V** with MB electronic board with fitted 2 way valve
CVP-ECM-MBA-3V with MB board with fitted 3 way valve	**CVP-ECM-MB-E-3V** with MB electronic board with fitted 3 way valve

Casing: made of auto-extinguishing ABS UL94 HB plastic RAL 9003 with high specifications and great resistance to aging. The diffusion flap is adjusted manually (not motorised flap) in CVP-ECM-A version, on the contrary it is adjusted by remote control in CVP-ECM-TA version or with T-MB2 wall control in CVP-ECM-MBA version (both with motorised flap).

Filter: washable-regenerable synthetic filter, readily accessible.

Fan assembly: made of plastic tangential fan.

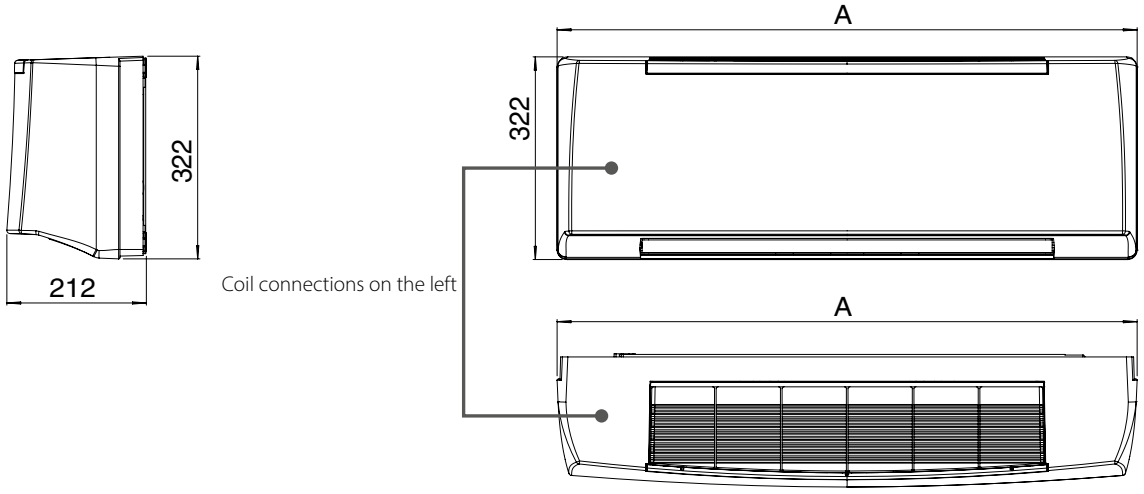
Electronic motor: three phase permanent magnet brushless electronic motor that is controlled with current reconstructed according to a **BLAC** sinusoidal wave.
The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a **switching system**, it generates a three-phase frequency modulated, wave form power supply.
The electric power supply required for the machine is therefore single-phase with voltage of **230 - 240 V** and frequency of **50 - 60 Hz**.

Coil: it is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process.
The coil has two 1/2 inch BSP internal connections and 1/8 inch BSP air vent and drain.
The heat exchanger is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.
The connections are on the left side facing the unit only.

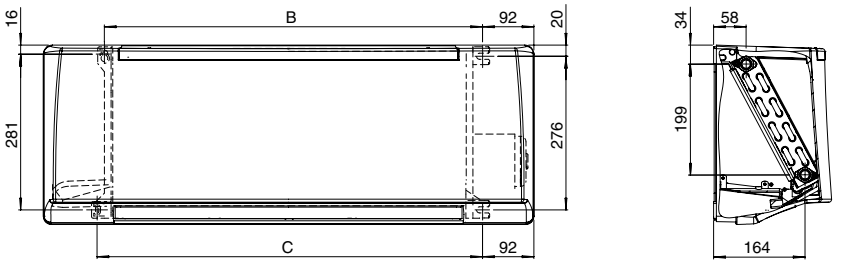
Electric heater (models with electric heater only):
The heater is hermetically sealed and supplied inside the battery pipes and therefore can be only factory mounted.
The electric heaters of the **Fly-ECM** units are single phase 230V supply.

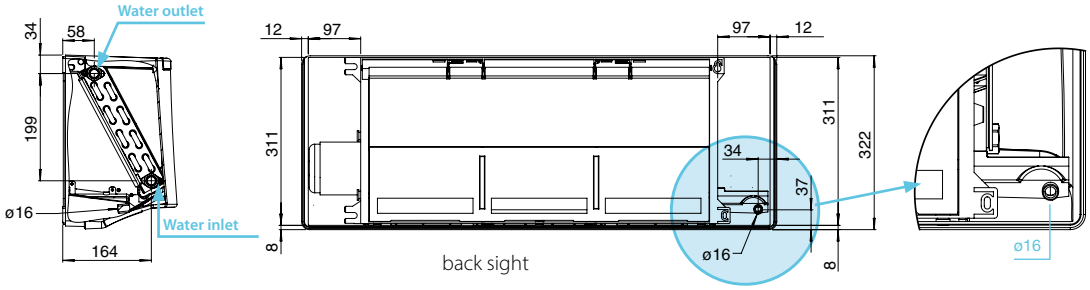
Condensate collection tray: made from polypropylene; the outside diameter of the condensate discharge pipe is 16 mm.

Installation template: a cardboard installation template is supplied with every unit to help the mounting on the wall.



Mounting dimensions





Model	Weight without valves kg	Weight with valves kg	Water content litres	A mm	B mm	C mm
0	10	11	0,9	880	678	691
1	10	11	0,9	880	678	691
2	10	11	0,9	880	678	691
3	13	14	1,3	1185	983	996
4	13	14	1,3	1185	983	996

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2 pipe units. The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature: +27 °C d.b. +19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

HEATING (winter mode)
Entering air temperature: +20°C
Water temperature: +45°C E.W.T. +40°C L.W.T.

Model		0						1				
Inverter Power **(V)**		1 **(E)**	2	3	5 **(E)**	7,5	10 **(E)**	1 **(E)**	3	5 **(E)**	7,5	10 **(E)**
Speed		**MIN**			**MED**		**MAX**	**MIN**		**MED**		**MAX**
Air flow	m^3/h	**130**	148	230	**290**	340	**415**	**190**	240	**290**	355	**415**
Cooling total emission **(E)**	kW	**0,61**	0,86	1,28	**1,57**	1,78	**1,98**	**1,16**	1,38	**1,57**	1,80	**1,98**
Cooling sensible emission **(E)**	kW	**0,47**	0,66	0,90	**1,19**	1,38	**1,56**	**0,85**	1,03	**1,19**	1,39	**1,56**
Heating **(E)**	kW	**0,72**	1,05	1,48	**1,78**	2,15	**2,35**	**1,26**	1,53	**1,78**	2,09	**2,35**
Dp Cooling **(E)**	kPa	**1,4**	2,6	5,2	**7,7**	9,4	**11,2**	**5,0**	5,9	**7,7**	9,4	**11,2**
Dp Heating **(E)**	kPa	**1,6**	3,0	5,6	**7,5**	12,0	**12,4**	**4,0**	5,7	**7,5**	10,0	**12,4**
Fan **(E)**	W	**3**	4	7	**9**	10	**15**	**6**	7	**9**	11	**15**
Sound power Lw **(E)**	dB(A)	**26**	30	38	**46**	49	**52**	**35**	39	**46**	48	**52**
Sound pressure Lp **(*)**	dB(A)	**17**	21	29	**37**	40	**43**	**26**	30	**37**	39	**43**

Model		2					3				
Inverter Power **(V)**		1 **(E)**	3	5 **(E)**	7,5	10 **(E)**	1 **(E)**	3	5 **(E)**	7,5	10 **(E)**
Speed		**MIN**		**MED**		**MAX**	**MIN**		**MED**		**MAX**
Air flow	m^3/h	**260**	315	**375**	440	**510**	**270**	345	**420**	520	**620**
Cooling total emission **(E)**	kW	**1,46**	1,66	**1,86**	2,05	**2,24**	**1,82**	2,19	**2,52**	2,92	**3,27**
Cooling sensible emission **(E)**	kW	**1,09**	1,27	**1,45**	1,63	**1,81**	**1,30**	1,59	**1,85**	2,17	**2,48**
Heating **(E)**	kW	**1,63**	1,90	**2,18**	2,46	**2,74**	**1,83**	2,24	**2,63**	3,11	**3,57**
Dp Cooling **(E)**	kPa	**6,9**	8,2	**10,1**	12,0	**14,1**	**10,7**	14,8	**19,0**	24,8	**30,4**
Dp Heating **(E)**	kPa	**6,4**	8,4	**10,8**	13,4	**16,3**	**8,7**	12,5	**16,6**	22,5	**28,8**
Fan **(E)**	W	**7**	9	**12**	16	**22**	**6**	8	**11**	15	**20**
Sound power Lw **(E)**	dB(A)	**40**	44	**47**	51	**55**	**37**	42	**45**	49	**53**
Sound pressure Lp **(*)**	dB(A)	**31**	35	**38**	42	**46**	**28**	33	**36**	40	**44**

Model		4				
Inverter Power **(V)**		1 **(E)**	3	5 **(E)**	7,5	10 **(E)**
Speed		**MIN**		**MED**		**MAX**
Air flow	m^3/h	**375**	465	**550**	665	**770**
Cooling total emission **(E)**	kW	**2,33**	2,71	**3,03**	3,41	**3,72**
Cooling sensible emission **(E)**	kW	**1,69**	2,00	**2,27**	2,61	**2,89**
Heating **(E)**	kW	**2,40**	2,85	**3,26**	3,76	**4,20**
Dp Cooling **(E)**	kPa	**16,5**	21,6	**26,6**	32,9	**38,7**
Dp Heating **(E)**	kPa	**14,1**	19,3	**24,4**	31,7	**38,6**
Fan **(E)**	W	**9**	12	**16**	22	**30**
Sound power Lw **(E)**	dB(A)	**43**	46	**49**	53	**57**
Sound pressure Lp **(*)**	dB(A)	**34**	37	**40**	44	**48**

(E) = EUROVENT certified performance. **MIN-MED-MAX** = Standard connected speeds.
(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

Controls for CVP-ECM-A versions

CVP-ECM-A version	
WM-S-ECM	Continuous fan speed control with electronic thermostat, summer/winter switch and liquid crystal display

Controls for CVP-ECM-TA versions

CVP-ECM-TA Version	
KC-F	Connectivity kit "High Wall Connectivity Kit" (auxiliary board for Modbus connection + auxiliary board for T-MB2 connection)
PSM-DI	PSM-DI multifunction control panel (to be used with connectivity kit only)
T-DI	T-DI touch screen multifunction control panel (to be used with connectivity kit only)
SabWeb	Web gateway for Sabiana Cloud (to be used with connectivity kit only)

Electronic controls for MB boards

CVP-ECM-MBA version	
T-MB2	Wall control with LCD color display and WiFi
RS-RT03-F	Infra-red remote control with receiver supplied with separate packaging
RT03 / RR03	Infra-red remote control supplied with separate packaging
RT04	Infra-red remote control supplied with separate packaging (to be used with MB board only) - **Available from April 2025**
RS-F	Receiver for infra-red remote control supplied with separate packaging
PSM-DI	PSM-DI multifunction control panel
T-DI	T-DI touch screen multifunction control panel
SabWeb	Web gateway for Sabiana Cloud)

Sabianet management system for a network of fan coils	
Sabianet	Hardware/software supervisory system (to be used with CVP-ECM-MBA board only)
Router-S	Router for Sabianet (default) or for BMS systems not provided by Sabiana
SIOS	Relay output board for Sabianet

Controls for KNX systems

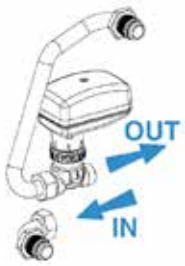
KNX systems	
WM-KNX	Wall control with electronic thermostat and summer/winter switch (to be used with UP-KNX and PL mounting plate only)
UP-KNX	UP-KNX power unit supplied with separate packaging
PL-503-B	Mounting plate for rectangular box
PL-QUA-B	Mounting plate for rectangular box

3 way valve

Control valve kit:
3 way valve, 230V ON-OFF,
with electric motor and mounting kit
with micrometric lockshield valve.

2 way valve

Control valve kit:
2 way valve, ON-OFF,
with electric motor and mounting kit.



Condensate drain pump

Wall or concealed installation kit

NOTE: for more information about Controls and for full list of main Accessories, please see the dedicated pages.

Built-in electronic controls

for Fan Coils with Asynchronous Motor

for Carisma CRC versions with casing

CB

CB-T

CB-C

CB-AUT

CB-IAQ

CB-R-IAQ

CB-AUT-IAQ

Functions	Identification						
	CB	CB-T	CB-C	CB-AUT	CB-IAQ	CB-R-IAQ	CB-AUT-IAQ
ON-OFF switch	✔	✔	✔	✔	✔	✔	✔
ON-OFF switch for Crystall electrostatic filter or electric heater					✔	✔	✔
Manual 3 speed switch	✔	✔	✔	✔	✔	✔	✔
Manual/Automatic 3 speed selection				✔			✔
Summer/Winter switch		✔		✔		✔	✔
Remote centralized Summer/Winter switch or by an automatic change-over fitted on the water pipe			✔	✔		✔	✔
Automatic Summer/Winter switch with neutral zone for 4 pipe installation with 2 valves				✔			✔
Room thermostat for fan control (ON-OFF)		✔	✔	✔		✔	✔
Room thermostat for 1 valve control (2 pipe installation)		✔	✔	✔		✔	✔
Room thermostat for 2 valve control (4 pipe installation)		✔	✔	✔		✔	✔
Simultaneous thermostatic control of the valves and fan				✔			✔
Room thermostat for chilled water valve (SUMMER) and electric heater (WINTER) control (in winter only the electric heater is working)		✔	✔	✔		✔	✔
Room thermostat for fan and electric heater control (not for Crystall)				✔		✔	✔
Installation of electronic low temperature cut-out thermostat (TME)			✔			✔	
Installation of bimetallic low temperature cut-out thermostat (TMM)		✔					
Installation of electronic low temperature cut-out thermostat (NTC)				✔			✔

Wall electronic controls

for Fan Coils with Asynchronous Motor

for all Carisma - SkyStar - Maestro Range

WM-AU

WM-T

WM-TQR

T-MB2

WM-503-AC-EC

T2T

WM-3V

Functions	Identification						
	WM-3V	WM-T	WM-TQR	WM-AU	WM-503-AC-EC	T-MB2	T2T
ON-OFF switch	✔	✔	✔	✔	✔	✔	✔
ON-OFF switch for Crystall electrostatic filter or electric heater			✔	✔		✔	
Manual 3 speed switch	✔	✔	✔	✔	✔	✔	✔
Manual/Automatic 3 speed selection				✔	✔	✔	
Summer/Winter switch		✔	✔	✔	✔	✔	✔
Remote centralized Summer/Winter switch or by an automatic change-over fitted on the water pipe (*)			✔	✔		✔	
Automatic Summer/Winter switch with neutral zone for 4 pipe installation with 2 valves (*)				✔	✔	✔	
Room thermostat for fan control (ON-OFF)		✔	✔	✔	✔	✔	✔
Room thermostat for 1 valve control (2 pipe installation)		✔	✔	✔	✔	✔	✔
Room thermostat for 2 valve control (4 pipe installation)		✔	✔	✔	✔	✔	
Simultaneous thermostatic control of the valves and fan			✔	✔	✔	✔	✔
Room thermostat for chilled water valve (SUMMER) and electric heater (WINTER) control (in winter only the electric heater is working)		✔	✔	✔	✔	✔	
Room thermostat for fan and electric heater control (not for Crystall)			✔	✔		✔	
Installation of bimetallic low temperature cut-out thermostat (TMM)		✔					
Installation of electronic low temperature cut-out thermostat (NTC) (*)			✔	✔	✔	✔	

NOTE: the WM-AU, T-MB2 and WM-503-AC-EC controls can be used only with dedicated power unit (see technical manuals and/or price list)
(*) for the controls that use the power unit, check on the technical manual if the feature is available.

Remote control and T-MB2 wall control

for all the Carisma and SkyStar Range with Asynchronous Motor and with EC Brushless Electronic Motor and Inverter Board

All Carisma and SkyStar units can be supplied with a microprocessor management and control system with **infra-red remote control** and liquid crystal display or with the **T-MB2 wall control** to be used with **MB board**.

RT03 / RR03 remote control

RT04 remote control

T-MB2 wall control with LCD color display and WiFi

PSM-DI

multifunction control panel

for all the Carisma and SkyStar Range with Asynchronous Motor and with EC Brushless Electronic Motor and Inverter Board

Another option available for the serial communication between the units is the possibility to connect up to 60 Carisma and SkyStar units in series (the maximum length of the connection cable must not exceed 800 m) and manage them with just one **wall mounted intelligent PSM-DI controller**.

The wall mounted controller can be used to set the operating mode for each individual unit connected, display the operating conditions of each individual unit, and set the ON/OFF time sets for each day of the week.

If **more than 60 units need to be connected, two or more** wall mounted intelligent controllers must be used. Each wall control will manage only the connected units. Each unit must have a **MB board**.

PSM-DI control panel

T-DI

Touch screen multifunction control panel

Carisma and SkyStar Cassette fan coil ranges with AC asynchronous motor and with EC electronic motor and inverter board

The T-DI multifunction control panel lets supervise and control more units with MB or SIOS boards; the panel is equipped with a 7 inches touch screen display and a serie of graphical pages that allows an easy reading of the data sent by the fan coils and the management of up to 60 units (max. 60 units: SIOS + MB).

With the multifunction control panel T-DI it is also possible to control the units remotely with the specific **Sabiana Cloud App for Android and iOS**.

The Sabiana Cloud APP is simple to use and lets have complete control of all the connected units.

T-DI Touch screen multifunction control panel

SabWeb

Web gateway for Sabiana Cloud

Carisma and SkyStar Cassette fan coil ranges with AC asynchronous motor and with EC electronic motor and inverter board

With the Web gateway for "Sabiana Cloud" it is possible to control remotely up to 60 units, equipped with MB or SIOS boards (max. 60 units: SIOS + MB), with the specific APP for Android and iOS.

The "Sabiana Cloud" APP is simple to use and lets have complete control of all the connected units.

Web gateway for Sabiana Cloud

Sabianet

management system for a network of fan coils

for all the Carisma and SkyStar Range

Sabianet is a centralised control system for networks of MB fan coils, based on software that runs **on Linux operating system** (the program is provided pre-installed on a PC). The Sabianet software **offers a practical and economical solution** for managing the fan coils, with the simple click of the mouse.

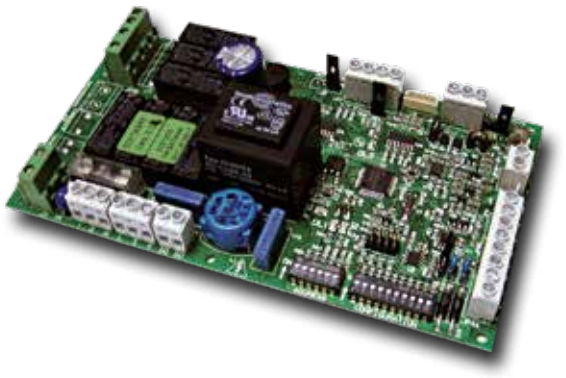
The main characteristics include simplicity of use, an extremely complete and functional weekly program, and the possibility to access the historical operating data for each individual unit connected.

pc

Sabianet screenshot

MB board for all the Carisma and SkyStar Range

The MB boards, besides being used with **T-MB2** controls, with infra-red remote control units, with **PSM-DI** and with the units managed with **Sabianet** software, can also be interfaced with BSM supervisory systems that use **Modbus** communication protocol.



KNX bus system

The KNX bus system is a building automation standard for controlling, managing and monitoring a wide range of products for:

- heating, cooling, ventilation
- lighting
- alarm systems
- audio and video systems
- electricity and gas

Since 2016, Sabiana is a certified member of the KNX association and the certified products can be added to this system in compliance with the tests carried out at KNX laboratories.

KNX devices

The Sabiana WM-KNX room thermostat controls and adjusts the temperature of a room or area in a building. In combination with one or several UP-KNX power units, the thermostat is able to control the operation of terminal units such as fan coils. The appliance consists of an LCD display with adjustable backlight and a sensor for measuring the room temperature.

WM-KNX is suitable for installation in a recessed wall box.

Recessed thermostat
WM-KNX
Code 9066679

with rectangular plate

With square plate

Power unit
UP-KNX
Code 9066680

Electronic controls

for Fan Coil Units with EC Brushless Electronic Motor and Inverter Board

CB-T-ECM
for CRC-ECM, CRT-ECM and CRR-ECM versions

CB-T-ECM-IAQ
for CRC-ECM and CRR-ECM version

WM-AU

T-MB2

WM-503-AC-EC

WM-S-ECM

for all the Carisma ECM and SkyStar ECM Range	
Infra-red remote control	for the characteristics, see previous pages
T-MB2 wall control with LCD color display and WiFi	
PSM-DI multifunction control	
Sabianet management system for a network of fan coils	
Controls for KNX systems	

Functions	Identification					
	built-in		wall			
	CB-T-ECM	CB-T-ECM-IAQ	WM-AU	T-MB2	WM-503-AC-EC	WM-S-ECM
ON-OFF switch	✔	✔	✔	✔	✔	✔
Room thermostat for chilled water valve (SUMMER) and electric heater (WINTER) control (in winter only the electric heater is working)		✔	✔	✔		
Manual 3 speed switch or automatic continuous speed control	✔	✔	✔	✔	✔	✔
Summer/Winter switch	✔	✔	✔	✔	✔	✔
Continuous speed control based on the difference between ambient temperature and Set temperature (speed switch in Auto position)	✔	✔	✔	✔	✔	✔
Remote centralized Summer/Winter switch or by an automatic change-over fitted on the water pipe (*)			✔	✔		
Room thermostat for fan control (ON-OFF)	✔	✔	✔	✔	✔	✔
Room thermostat for 1 valve control (2 pipe installation)	✔	✔	✔	✔	✔	✔
Room thermostat for 2 valve control (4 pipe installation)	✔	✔	✔	✔	✔	✔
Simultaneous thermostatic control of the valves and fan	✔	✔	✔	✔	✔	✔
Room thermostat for fan and electric heater control (not for Crystall)		✔	✔	✔		
Installation of electronic low temperature cut-out thermostat (NTC) (*)	✔	✔	✔	✔	✔	✔

NOTE: the WM-AU, T-MB2 and WM-503-AC-EC controls can be used only with dedicated power unit (see technical manuals and/or price list)
(*) for the controls that use the power unit, check on the technical manual if the feature is available.

Accessories

for Carisma range

CRC/CRC-ECM - CRT-ECM - CRR-ECM - CRSL/CRSL-ECM - CFF/CFF-ECM - CCN/CCN-ECM

All Sabiana Carisma fan coils, whether with **Asynchronous Motor** or with **Electronic Motor and Inverter**, can be equipped with a **very large series of Accessories**, such as, to name only the most common, numerous types of regulating valves, sturdy support feet, rear cover panel for installing against glass, additional electrical resistances, auxiliary condensation drain pump, outdoor air intake louvre, inlet and outlet ducts and grills for ducted installations.

Accessories		Identification					
		CRC CRC-ECM	CRT-ECM	CRR-ECM	CFF CFF-ECM	CRSL CRSL-ECM	CCN CCN-ECM
Main coil 3 way valve	**VBP**	✔	✔	✔		✔	✔
Additional coil 3 way valve	**VBA**	✔	✔			✔	✔
Simplified kit for 3 way valve for main and additional coil (concealed model only)	**VS**	✔	✔			✔	✔
3 way double valve kit for 4 tube installation and single coil	**V3M4X2 V3S4X2**	✔	✔			✔	✔
2 way valve for main and additional coil	**V2**	✔	✔	✔	✔	✔	✔
3 way valve for main and additional coil	**V3**				✔		
Balancing valves independent from the system pressure for main and additional coil	**V20 VBP V20 VBA**	✔	✔			✔	✔
Electric heater (not available with Crystall filter)	**BEL**	✔	✔			✔	✔
Extension condensate collection tray to cover valve assembly (for vertical units)	**BSV**	(MV-MVB-IV)	(MV-MVB-IV)	✔		✔	
Extension condensate collection tray to cover valve assembly (for MO horizontal units)	**BSO**	(MO)	(MO)				✔
Extension condensate collection tray to cover valve assembly (for IO horizontal units)	**BSI-C**	(IO)	(IO)			✔	
Horizontal condensate collection tray kit (for IV concealed version)	**BSI-CF**				(CFF-IV)		
Condensate pump (for vertical units)	**DRPV-C**	(MV-MVB-IV)	(MV-MVB-IV)			✔	
Condensate pump (for horizontal units)	**DRPO-C**	(MO)	(MO)				
Condensate pump (for horizontal units)	**DRPI-C**	(IO)	(IO)			✔	
Plastic condensate drain pipe with fast connection	**SCR**	✔	✔			✔	✔

continued

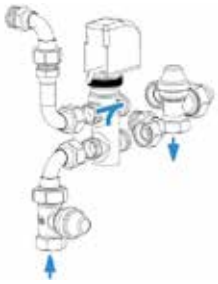
Accessories		Identification					
		CRC CRC-ECM	CRT-ECM	CRR-ECM	CFF CFF-ECM	CRSL CRSL-ECM	CCN CCN-ECM
Feet	**PAP**	✔	✔	✔			
Feet	**PAP-F**				✔		
Feet for floor fixing	**PAP-F-PO**				(MV)		
Feet for floor fixing	**PAP-MVM**				(MVM)		
Aluminium low intake grid	**GAP**	✔	✔				
Frontal intake kit	**KAF**	(IV-IO)	(IV-IO)			✔	
Rear closing panel (for vertical units)	**PCV**	(MV-MVB)	(MV-MVB)				
Bottom closing panel (for horizontal units)	**PCO**	(MO)	(MO)				
Rear panel	**PPV-CF**				✔		
Fresh air mixing damper (mounted on the unit)	**SAEM**	(MV)	(MV)				
Fresh air mixing damper (not mounted)	**SAE**	(IV-IO)	(IV-IO)				
Belimo motor (not available with ECM range)	**BESAE**	(MV-IV-IO)					
Straight inlet flange	**FRD**	✔	✔			✔	
90° inlet flange	**FR 90**	✔				✔	
Air inlet grid (to be used with FR 90 90° inlet flange)	**GRAP**	✔				✔	
Air inlet grid (to be used with FRD straight inlet flange)	**GRAG**	✔	✔			✔	
Lateral filter removal kit	**KEL**					✔	
Straight outlet flange	**FMD**	✔	✔			✔	
90° outlet flange	**FM 90**	✔				✔	
Air outlet grid	**BMA**	✔	✔			✔	
Air inlet spigot plenum	**PRC**	✔				✔	
Spigot diffuser	**PMC**	✔				✔	
Air inlet grid with filter (to be fitted to the FR 90 90° inlet flange)	**GRAFP**	✔					
Air inlet grid with filter (to be fitted to the FRD straight inlet flange)	**GRAFG**	✔					
Condensate drain pump	**PCC**						✔
Fresh air connection	**FRC**	✔					✔
Hotel fan kit (frontal return and supply)	**CHK**	(IO)					
Air inlet silencer plenum	**BRS**					✔	
Supply silencer plenum	**BXS**	IV-IO				✔	
FLEXI spigot diffuser	**PM-FL**					✔	
FLEXI air inlet spigot plenum	**PR-FL**					✔	
Connection for Plenum FLEXI	**FR-FL**					✔	

Accessories | FOR CARISMA RANGE

VBP

Main coil 3 way valve

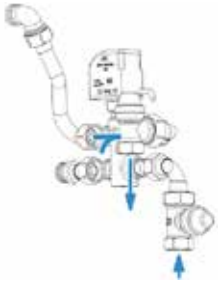
Control valve kit:
3 way valve, ON-OFF,
with electric motor and mounting kit
with micrometric lockshield valve.



VBA

Additional coil 3 way valve

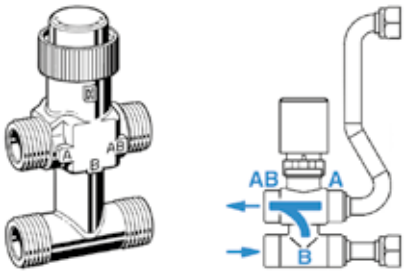
Control valve kit:
3 way valve, ON-OFF,
with electric motor and mounting kit
with micrometric lockshield valve



VS

Simplified kit
for 3 way valve
for main and additional coil
(concealed model only)

3 way valve, (ON-OFF)
with electric motor and mounting kit.
Valve with flat connection without micrometric lockshield valve..



V3M4X2
(mounted)

V3S4X2
(not mounted)

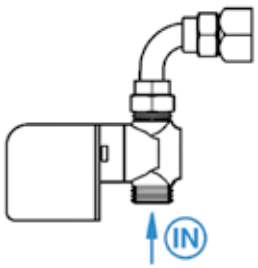
3 way double valve kit
for 4 tube installation and single coil
The kit consists of:

- 2 special 3 way valves
- 2 230 Volt ON-OFF actuators with internal safety micro switch
- insulated pipe kit
- external valve insulation sleeve.

V2

2 way valve
for main and additional coil

Control valve kit:
2 way valve, ON-OFF,
with electric motor and mounting kit



V20VBP **Balancing valves independent from the system pressure for main coil (Oventrop)**

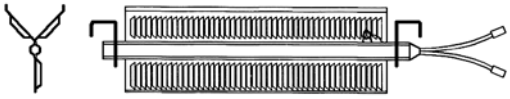
V20VBA **Balancing valves independent from the system pressure for additional coil (Oventrop)**

V2DFBP **Balancing valves independent from the system pressure for main coil (Danfoss)**

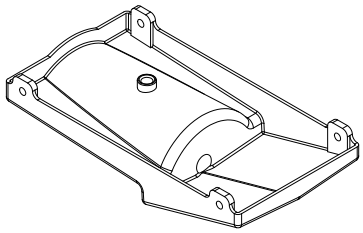
V2DFBA **Balancing valves independent from the system pressure for additional coil (Danfoss)**

BEL **Electric heater**
(not available with Crystall filter)

1 PHASE 230V
Electric heater with integral: safety thermostat and relay control..

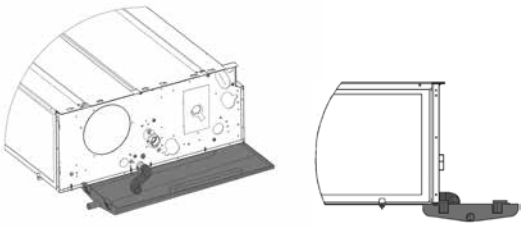


BSV **Extension condensate collection tray to cover valve assembly**
(for vertical units)

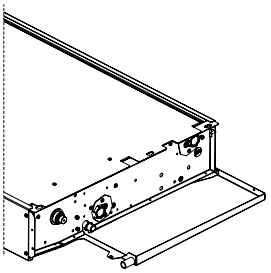


BSO **Extension condensate collection tray to cover valve assembly**
(for MO horizontal units)

BSI-C **Extension condensate collection tray to cover valve assembly**
(for IO horizontal units)



BSI-CF **Horizontal condensate collection tray kit**
(for IV version) (CFF-IV)



Accessories | FOR CARISMA RANGE

DRPV-C

Condensate pump
(for vertical units)

DRPO-C
DRPI-C

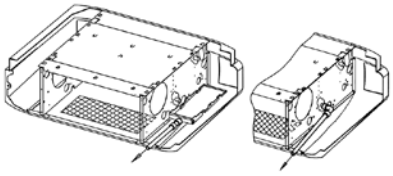
Condensate pump
(for horizontal units)

DRPO-C

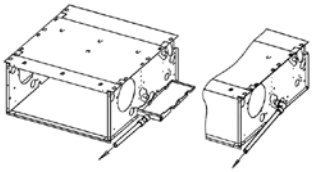
DRPI-C

SCR

Plastic condensate drain pipe with fast connection
Allows correct condensate drain.



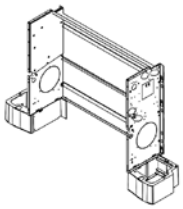
CRC / CRC- ECM
CRT-ECM



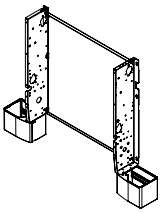
CRSL / CRSL- ECM
CCN / CCN-ECM

PAP
PAP-F

Feet



CRC / CRC-ECM
CRT-ECM / CRR-ECM

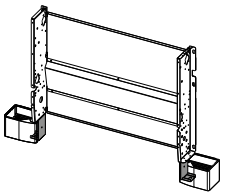


CFF-ECM / CFF

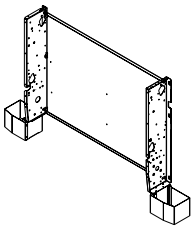
PAP-F-PO
PAP-MVM

Feet for floor fixing
(mandatory with rear aesthetic panel)

The kit is made of 2 floor mounting brackets and 2 feet.



CFF-ECM / CFF

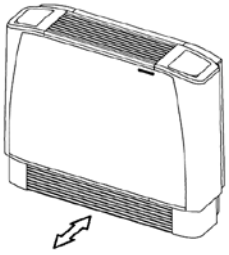


CFF-ECM-MVM

GAP

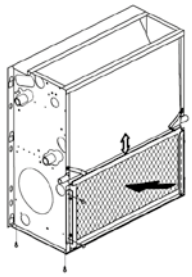
Aluminium low intake grid

To be installed with PAP feet.

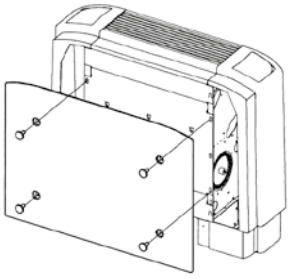


KAF **Frontal intake kit**

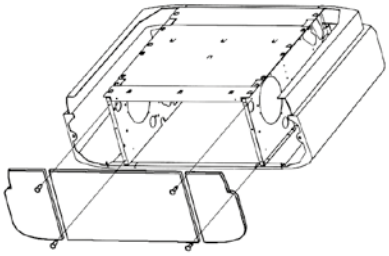
Bottom closing panel and filter sliding guide.



PCV **Rear closing panel**
(for vertical units)

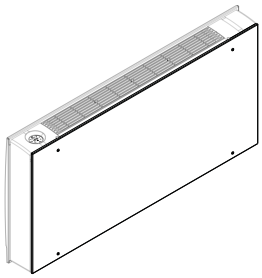


PCO **Bottom closing panel**
(for horizontal units)



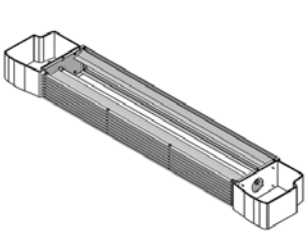
PPV-CF **Aesthetic rear panel**

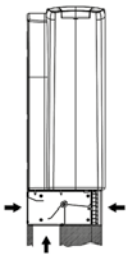
To be used always with the feet for floor fixing code 9071079 for Carisma Whisper floor installation



SAEM **Fresh air mixing damper**

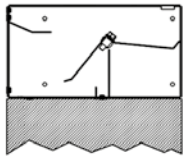
Mounted on the unit with feet and intake grid included.
Can be motorized on request.





SAE **Fresh air mixing damper**

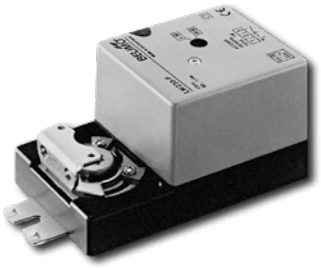
Not mounted.
Can be motorized on request.



Accessories | FOR CARISMA RANGE

BESAE **Belimo motor**
(not available with ECM range)

Fitted on the unit for motorized working of the damper.
(available with "IAQ" control only)

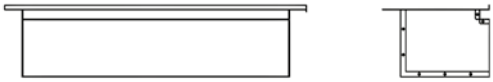


FRD **Straight inlet flange**

Can be used together with GRAG air inlet grid.
Made of galvanized steel.

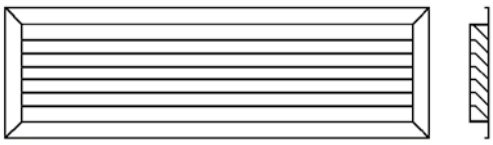
FR 90 **90° inlet flange**

Can be used together with GRAP air inlet grid.
Made of galvanized steel.



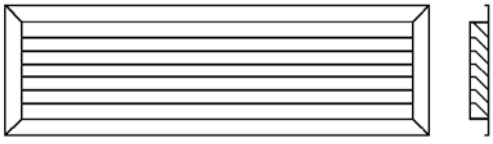
GRAP **Air inlet grid**

To be used with FR 90 90° inlet flange.
Made of anodized aluminium.

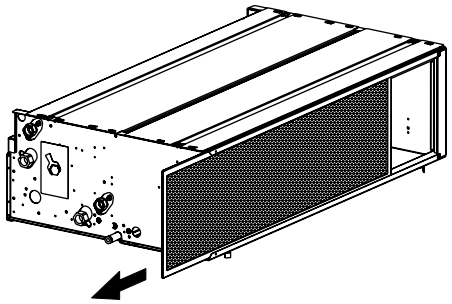


GRAG **Air inlet grid**

To be used with FRD straight inlet flange.
Made of anodized aluminium..

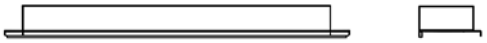


KEL **Lateral filter removal kit**



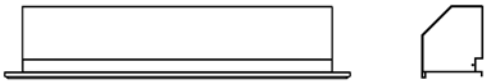
FMD **Straight outlet flange**

Made of galvanized steel.



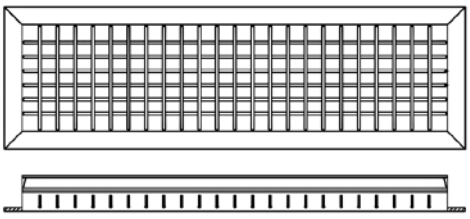
FM 90 **90° outlet flange**

Made of galvanized steel insulated with polyethylene lining..



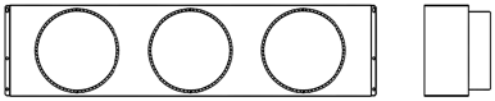
BMA **Air outlet grid**

Double louvre grid to be fitted to the duct, to the FMD straight outlet flange or to the FM 90 90° outlet flange.
Made of anodized aluminium.



PRC **Air inlet spigot plenum**

Made of galvanized steel insulated with polyethylene lining.



All the plenums are supplied
with spigots
for the connection of flexible ducts..

Accessories | FOR CARISMA RANGE

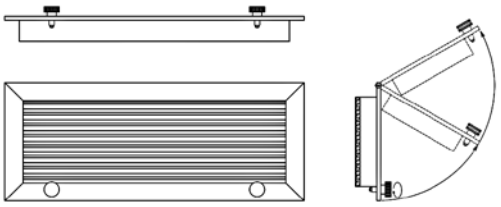
PMC **Spigot diffuser**

Made of galvanized steel insulated with polyethylene lininge.

All the plenums are supplied
with spigots
for the connection of flexible ducts.

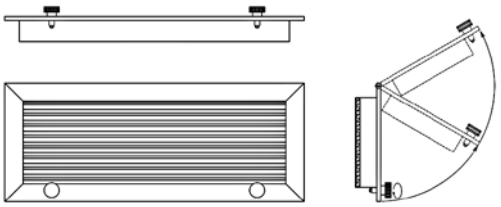
GRAFP **Air inlet grid with filter**

To be fitted to the FR 90 90° inlet flange.
Made of anodized aluminium.

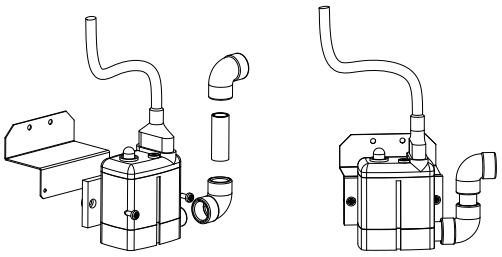


GRAFG **Air inlet grid with filter**

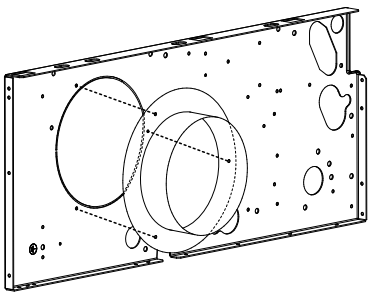
To be fitted to the FRD straight inlet flange.
Made of anodized aluminium.



PCC **Condensate drain pump**



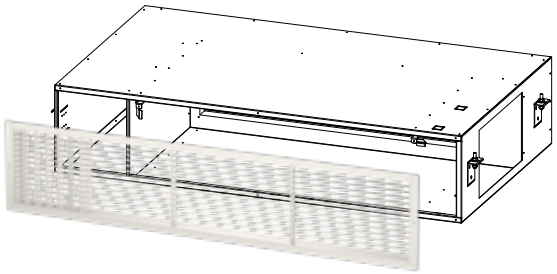
FRC **Fresh air connection**



CHK

Hotel fan kit
(frontal return and supply)

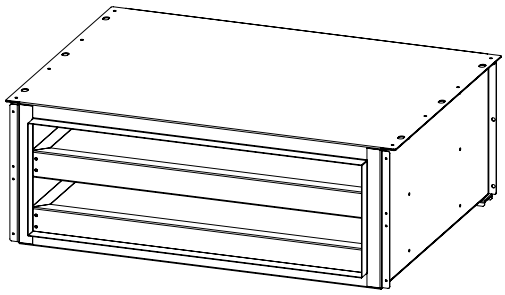
For concealed installation.



BRS

Air inlet silencer plenum
(CRSL / CRSL-ECM)

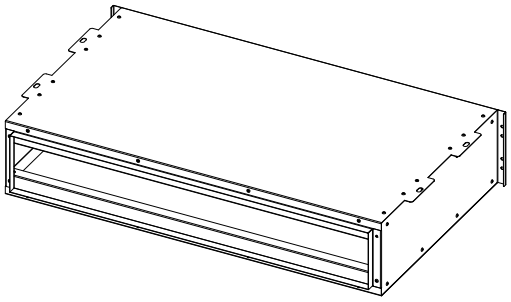
Made of galvanised steel metal sheet that is lined internally with a 3 sound-absorbing materials with a high sound absorption coefficient.



BXS

Air outlet silencer plenum
(for Carisma CRSL / CRSL-ECM and CRC / CRC-ECM, IV-IO models only)

Made of galvanised steel metal sheet, lined internally with a reinforced glass wool mat on both sides with a black glass coating.



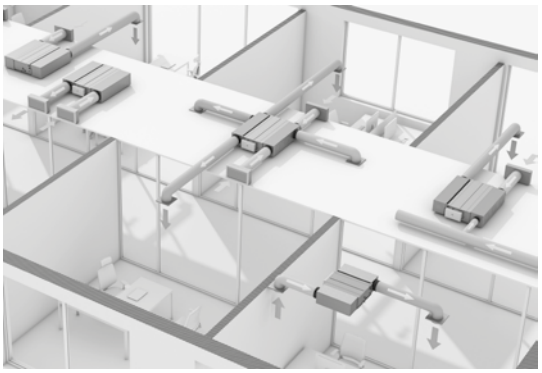
FLEXI

Air inlet/outlet plenum
(CRSL/CRSL-ECM)

Spigot for plenum Ø 125 mm, Ø 160 mm and Ø 200 mm available.

Air inlet and air outlet plenum range to be used with the ductable Carisma CRSL / CRSL-ECM fan coils, that allows the distribution and return of the ambient air in an extremely flexible way and easy in terms of installation.

With pre-cut holes of approx 200 mm, 160 mm and 125 mm of diameter on the frontal side and on the lateral sides.



Recovery units

The desire for a comfortable and healthy living environment is an inalienable right: our very lives depend on the quality of air. Buildings may be visually pleasing and welcome us with their heat, but they are increasingly 'sealed' and, thus, unable to naturally guarantee the necessary air for healthy and comfortable premises to their occupants and to the environment itself.

Sabiana offers high-efficiency mechanical ventilation units with recovery:

- **Energy Plus** for non-residential applications
- **Energy Smart** for residential applications.

The Energy units replace exhaust air from indoors with filtered air from outside, thanks to a special **high-efficiency filter**, recovering the extraction heat and conveying it towards the incoming fresh air provided indoors.

Mechanical ventilation solutions that guarantee real energy savings, capable of **recovering the highest amount of energy** contained in the exhaust air for the lowest possible energy consumption. Also, given the high variability of external climatic factors and occupational profiles, the units can **adapt to different needs**, while maintaining high indoor comfort standards and air quality.

Energy Plus
Recovery Unit

The **Energy Plus** ducted units have been designed to allow energy savings in the ventilation systems of public and private environments, such as bars, restaurants, offices, shops, etc., **by recovering the heat** from the air discharged and transferring it to the fresh air introduced into the environment.
The heat exchange between the extract air and the fresh air occurs via a static counter-flow exchanger, designed to recover **up to 94%** of the heat.

The **Energy Plus** units are equipped with centrifugal fans with backward blades and **electronic motor with continuous speed** control which allows the control at a variable flow rate, in order to reduce the electric waste to the minimum need.

The **Energy Plus** range features **4 sizes** suitable for horizontal installation and covers a range of air flows **from 300 to 2,600 m³/h**.
The Energy Plus units are **in compliance** with the mandatory standard according to the European Ecodesign Directive **(UE 1253/14 Regulation and Erp 2018)**.
The tests regard the thermal efficiency in terms of heat recovery and the **SFPint** internal specific fan power of ventilation components under nominal conditions.

External Panels: external galvanised plate sandwich panels, 24 mm thick, filled with 45 kg/m³ of polyurethane foam.

Heat Recovery Coil: the Heat Recovery Coil are static counter flow aluminium plates heat-exchangers of high efficiency. The top of the performances over 90% efficiency can beobtained thanks to the heat transfer between two air flows due to the temperature difference. Being static, there are no moving parts. This is a guarantee of very high reliability and operating safety. In order to increase the heat-exchanger efficiency, the plates surfaces are fitted with special swirlers.

The performance of the HOLMAK HEATX B.V. heat recovery unit is EUROVENT-certified.

www.eurovent-certification.com

The centrifugal discharge and intake air plug fans are with synchronous motor with permanent magnets and electronic control (EC), 230V power supply. The rotors are designed in order to guarantee an optimal air flow rate and the lowest noise level.

Air Filters. Pleated cell filters, 98 mm thick, efficiency ePM_1 55% - F7 for the intake air process and ePM_{10} 55% - M6 for the discharge air, sized to minimize pressure loss. Filters can be removed from dedicated openings provided in the casing.

Differential Pressure Switches for filter cleaning and warning in case of run out filters.

Electric Control Panel installed on the side of the unit.
The electric control panel is isolated from the air flow within a suitable box.
The electric control panelincludes main fuses and the electronic power board for the manual or automatic control of the fan operation and of the air handling accessories.
The wall control set is programmable with display and touch keypad.

Optional variable air flow operation depending on air quality (CO_2 and Relative Humidity).

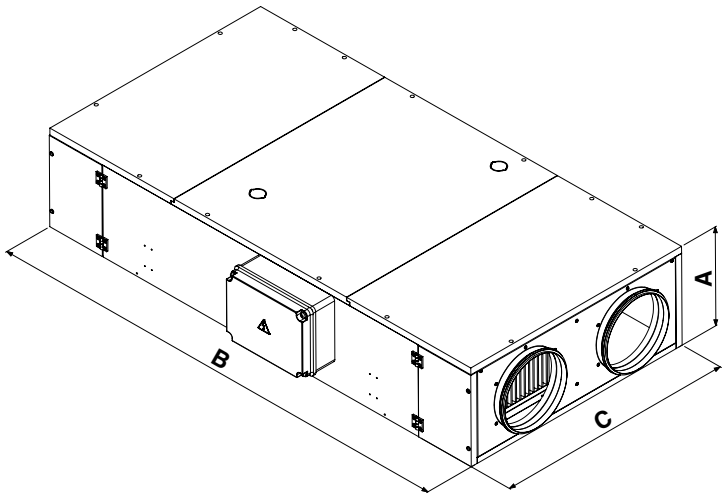
Inspection openings for maintenance, cleaning and filter change. Quick panels removal to access ventilation and recovery unit sections.

BY-Pass Damper with servocontrol. All the units are equipped with an automatic by-pass system that allows the by-pass of the recovery coil in order to let the free-cooling (or the free-heating).
The system is controlled with the logic based on the integrated temperature sensors.

Floor/ceiling installation. Optional adjustable hanging systems according to the weight of the units.

Optional extra:
- Post heating/cooling water coil.
- Plenum connectors for the Sabiana OCEAN sections.

Dimensions and weight



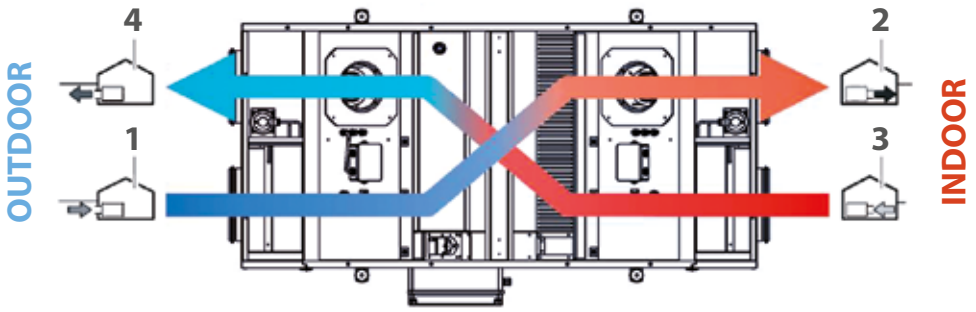
Model		ENY-P1	ENY-P2	ENY-P3	ENY-P4
Lenght **(B)**	mm	1700	1750	2100	2355
Width **(C)**	mm	850	1150	1250	1700
Height **(A)**	mm	344	385	470	610
Weight	kg	110	154	180	290

Nominal technical data

Model		ENY-P1	ENY-P2	ENY-P3	ENY-P4
Nominal and maximum return/supply air flow	m^3/h	720	1150	1700	2600
	m^3/s	0,20	0,32	0,47	0,72
Available pressure	Pa	170	220	250	250
Minimum air flow	m^3/h	270	300	600	690
Thermal efficiency UE 1253/14 (1) Regulation (1)	%	80	80	80	85
Recovered Heat Power (1)	kW	3,9	6,2	9,1	14,8
Recovery efficiency (2)	%	90	90	90	94
Max Recovery efficiency (2)	kW	6,5	10,5	15,4	24,5
Sound power level on the case	LWA	56	63	62	61
Fan number		2	2	2	2
Nominal power absorption (3)	W	330	770	1060	1460
Max current input (3)	A	2,8	3,6	4,7	6,5
Power voltage/frequency (3)	V-Ph	230-1+N 50Hz	230-1+N 50Hz	230-1+N 50Hz	230-1+N 50Hz

(1) = Dry Conditions: TAE = 5 °C and E.A.T. = 25 °C.
(2) = Air Conditions: TAE =10 °C and E.A.T. = 20 °C, URi 50% UR.
(3) = Basic version.

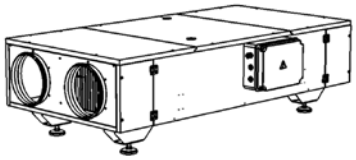
Typical air flow rates configuration



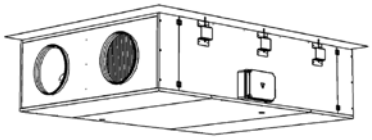
1 fresh air **2** supply air **3** extracted air **4** exhausted air

Installation

Floor installation

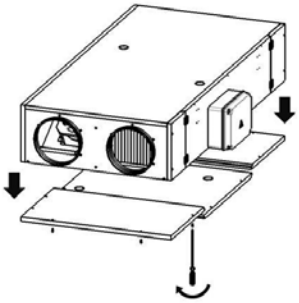


Ceiling installation

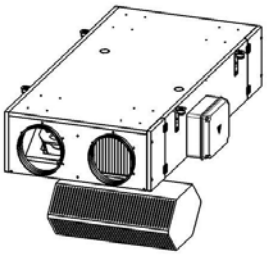


Inspection openings

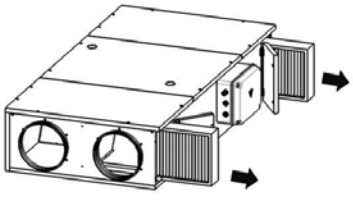
Maintenance access



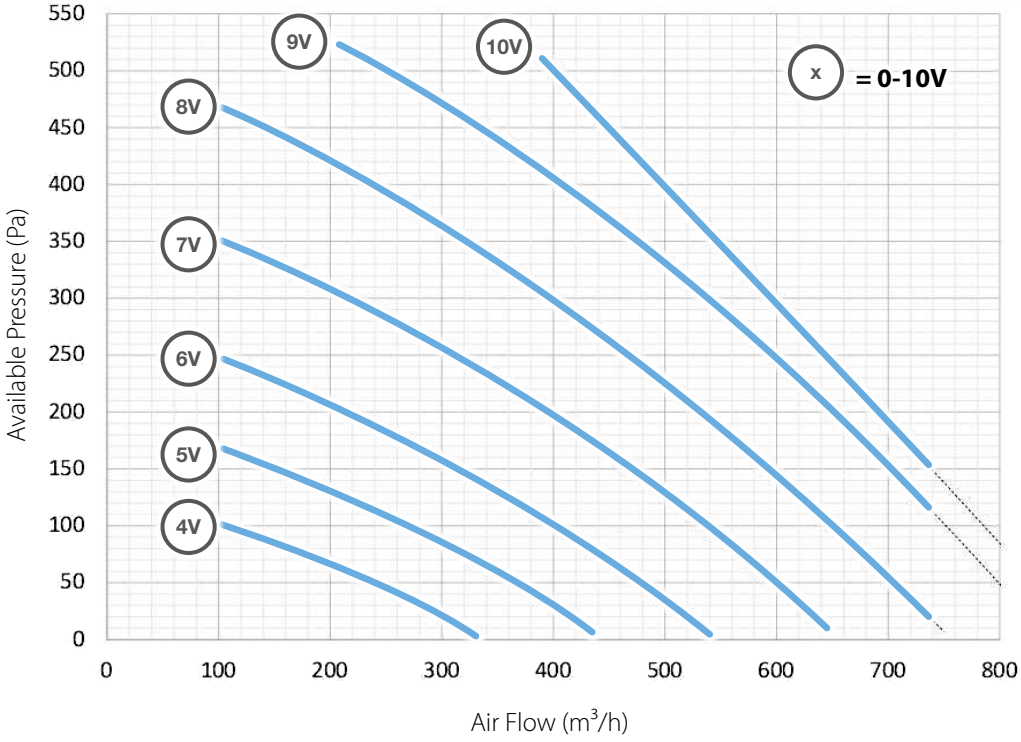
Heat-exchanger access



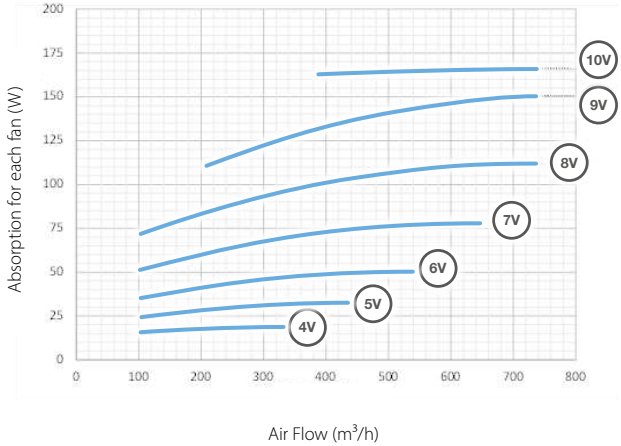
Filter



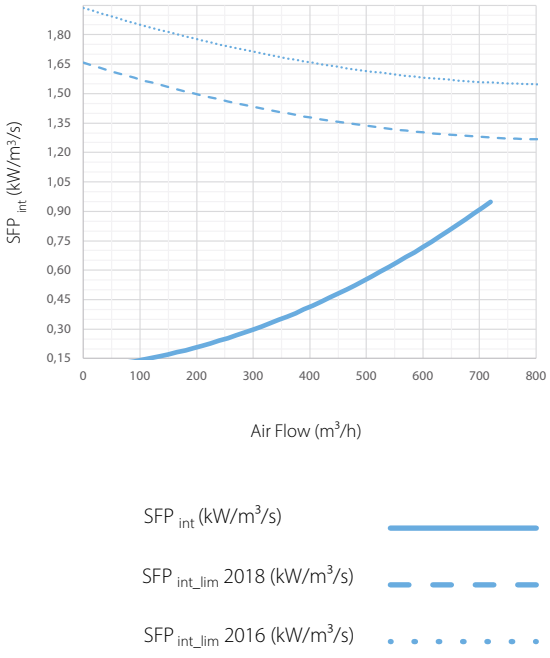
Return/Supply fans
Air flow/Available pressure



Power absorption for each fan (1)

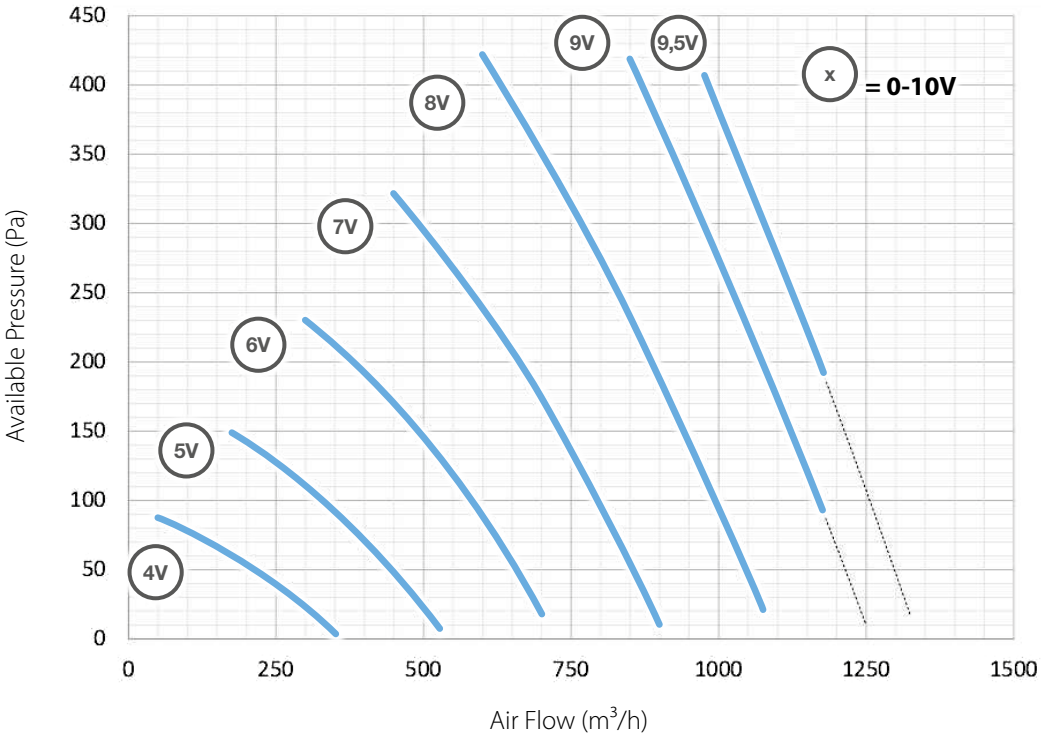


SFP int UE 1253/14

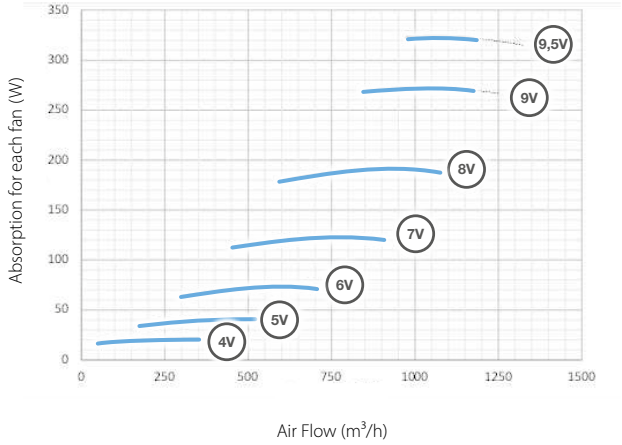


(1) = The power absorption for each fan is useful when fans are working in different conditions.

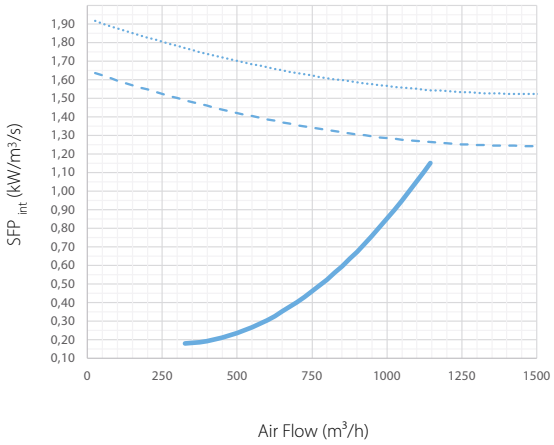
Return/Supply fans
Air flow/Available pressure



Power absorption for each fan (1)



SFP int UE 1253/14



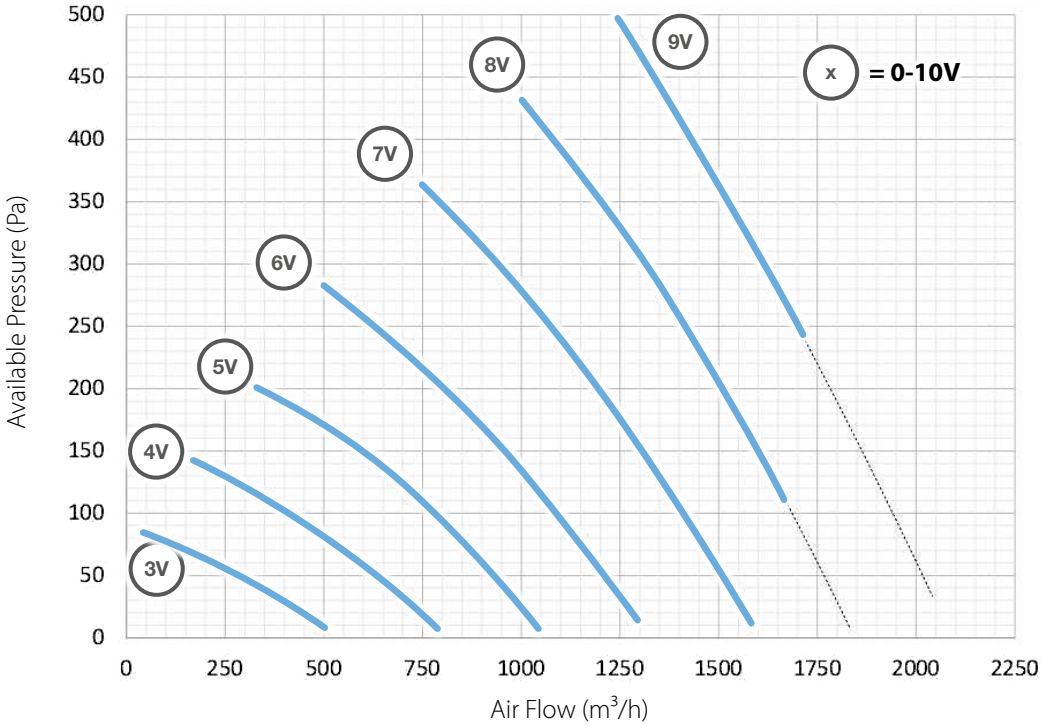
SFP int (kW/m³/s)

SFP int_lim 2018 (kW/m³/s)

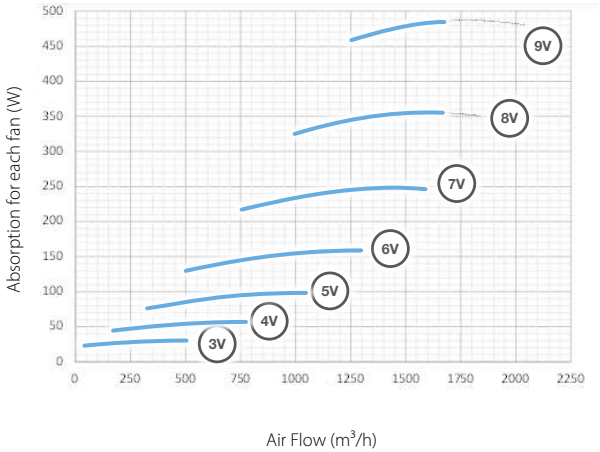
SFP int_lim 2016 (kW/m³/s)

(1) = The power absorption for each fan is useful when fans are working in different conditions.

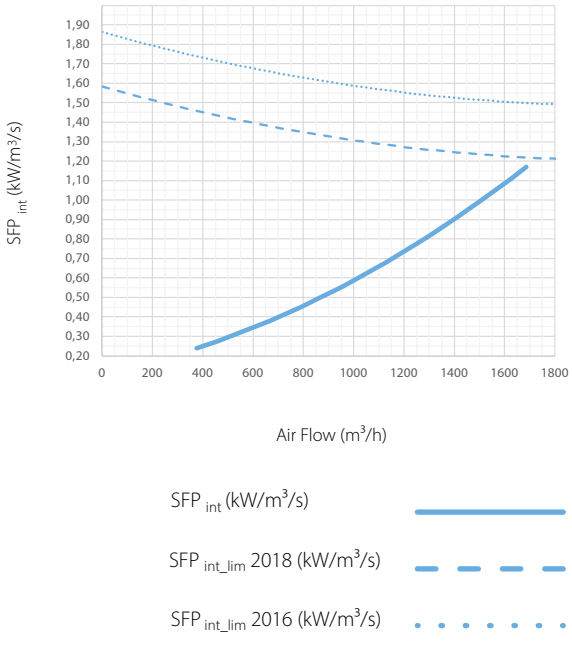
Return/Supply fans
Air flow/Available pressure



Power absorption for each fan (1)

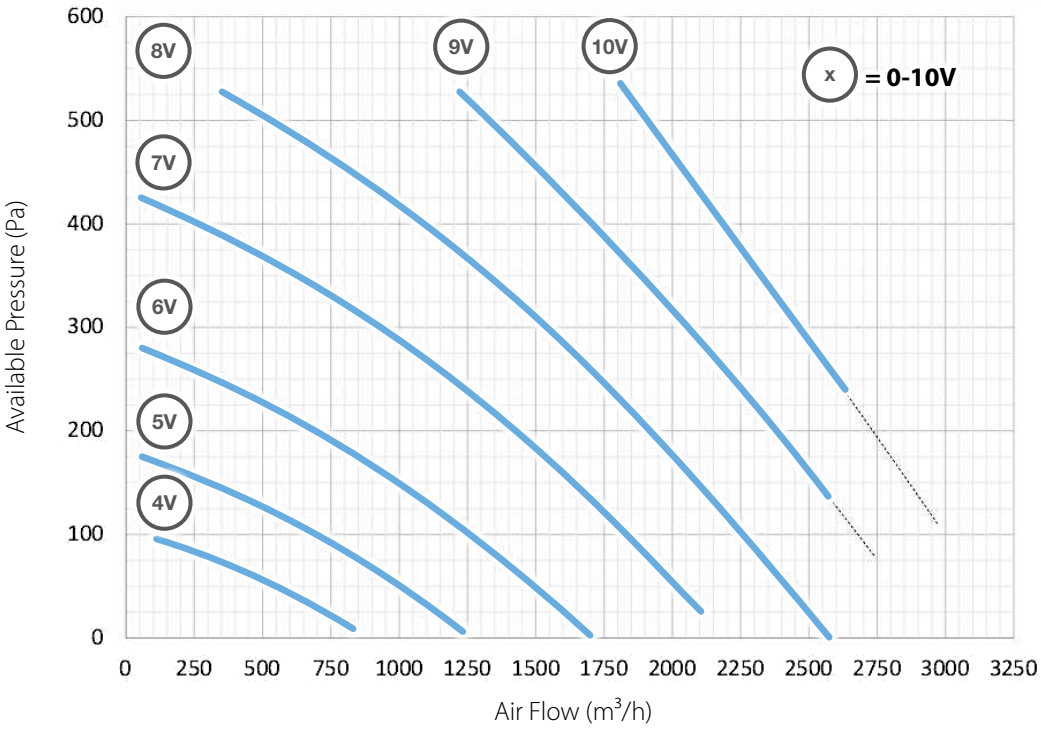


SFP int UE 1253/14

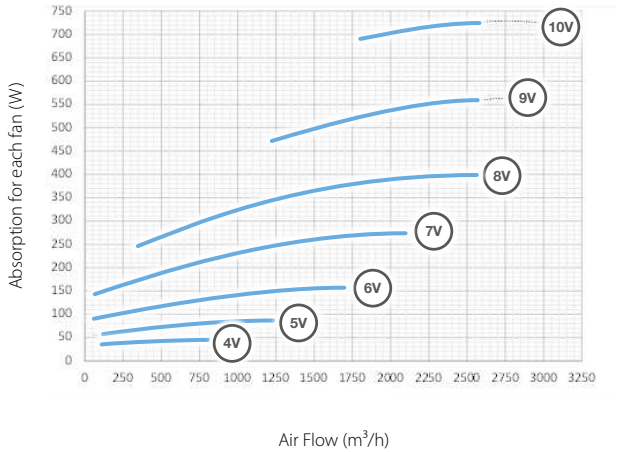


(1) = The power absorption for each fan is useful when fans are working in different conditions.

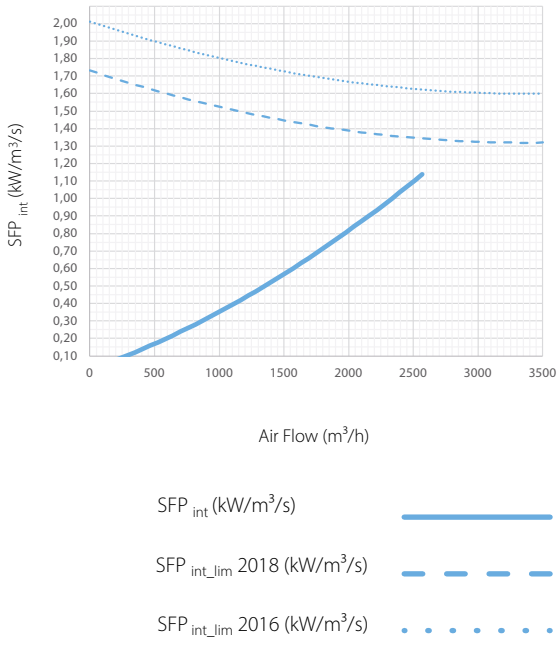
Return/Supply fans
Air flow/Available pressure



Power absorption for each fan (1)



SFP int UE 1253/14



(1) = The power absorption for each fan is useful when fans are working in different conditions.

Supply air conditions: E.A.T. = 20 °C – R.H. = 50%

Model		TAE: +10 °C			TAE: +5 °C			TAE: 0 °C			TAE: -5 °C			TAE: -10 °C		
	Q_v	P_h	ε_t	m_w	P_h	ε_t	m_w	P_h	ε_t	m_w	P_h	ε_t	m_w	P_h	ε_t	m_w
	m^3/h	kW	%	kg/h	kW	%	kg/h	kW	%	kg/h	kW	%	kg/h	kW	%	kg/h
ENY-P1	100	0,30	90,4	0,00	0,46	90,5	0,15	0,62	91,7	0,26	0,79	94,3	0,36	0,97	96,5	0,44
	150	0,44	88,2	0,00	0,67	88,3	0,21	0,90	89,8	0,38	1,17	92,7	0,53	1,44	95,4	0,65
	300	0,85	84,6	0,00	1,28	84,7	0,42	1,74	86,4	0,72	2,26	90,0	1,03	2,81	93,2	1,25
	450	1,25	82,6	0,00	1,87	82,7	0,62	2,55	84,5	1,09	3,34	88,4	1,52	4,16	91,9	1,85
	600	1,63	81,2	0,00	2,45	81,3	0,81	3,35	83,2	1,43	4,39	87,3	2,01	5,49	90,9	2,47
	750	2,01	80,1	0,00	3,03	80,2	0,96	4,13	82,2	1,71	5,43	86,4	2,43	6,80	90,1	3,01
ENY-P2	200	0,60	89,4	0,00	0,90	89,5	0,29	1,22	90,8	0,51	1,57	93,5	0,70	1,93	96,0	0,86
	250	0,74	88,2	0,00	1,11	88,3	0,36	1,50	89,7	0,63	1,94	92,7	0,88	2,40	95,3	1,08
	500	1,42	84,6	0,00	2,13	84,7	0,69	2,90	86,4	1,20	3,77	90,0	1,72	4,69	93,2	2,08
	750	2,08	82,5	0,00	3,12	82,6	1,04	4,25	84,5	1,81	5,56	88,4	2,52	6,93	91,8	3,09
	1000	2,72	81,1	0,00	4,08	81,2	1,35	5,57	83,1	2,38	7,31	87,2	3,35	9,14	90,8	4,12
	1250	3,35	80,0	0,00	5,04	80,1	1,68	6,88	82,1	2,85	9,04	86,3	4,05	11,32	90,0	5,00
ENY-P3	300	0,89	88,4	0,00	1,34	88,5	0,43	1,81	89,9	0,76	2,34	92,9	1,06	2,88	95,5	1,31
	400	1,17	86,9	0,00	1,75	87,0	0,56	2,38	88,5	1,00	3,08	91,8	1,37	3,81	94,6	1,69
	800	2,24	83,4	0,00	3,36	83,5	1,10	4,57	85,2	1,91	5,97	89,0	2,66	7,44	92,4	3,36
	1200	3,27	81,4	0,00	4,92	81,5	1,64	6,71	83,4	2,88	8,79	87,4	3,90	10,99	91,0	4,97
	1650	4,42	79,8	0,00	6,63	79,9	2,20	9,06	81,9	3,88	11,91	86,1	5,31	14,92	89,9	6,57
	2000	5,29	78,9	0,00	7,95	79,0	2,53	10,87	81,0	4,54	14,31	85,4	6,49	17,95	89,2	8,05
ENY-P4	400	1,28	95,3	0,00	1,92	95,4	0,63	2,58	96,1	1,10	3,27	97,5	1,50	3,97	98,7	1,75
	550	1,72	93,5	0,00	2,59	93,6	0,84	3,49	94,5	1,49	4,44	96,4	1,98	5,42	98,0	2,43
	1100	3,31	89,7	0,00	4,97	89,8	1,61	6,72	91,1	2,82	8,65	93,8	3,89	10,64	96,1	4,74
	1700	4,98	87,4	0,00	7,48	87,5	2,45	10,14	89,0	4,34	13,13	92,1	5,87	16,23	94,9	7,25
	2300	6,62	85,8	0,00	9,94	85,9	3,22	13,50	87,5	5,77	17,53	90,9	7,90	21,74	93,9	9,83
	2900	8,23	84,6	0,00	12,36	87,4	4,02	16,81	86,4	6,97	21,88	90,0	9,99	27,19	93,2	12,09

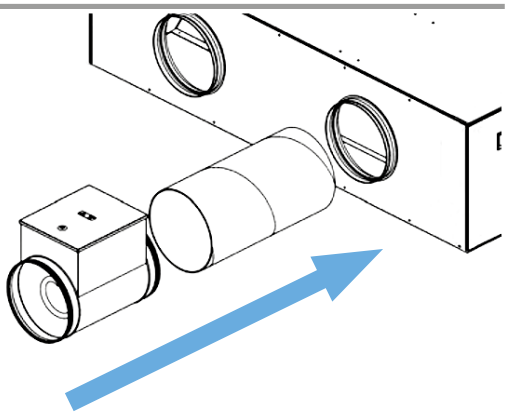
LEGEND:
TAE = Outside air temperature.
Q_v = Supply air flow rate.
P_h = Heat power recovered by supply air.
ε_t = Heat recovery efficiency with balanced air flow rates.
m_w = Condensate generation.

FORMULAS:

$$\varepsilon_t = \frac{2980\ P_h}{Q_v\ (t_i - TAE)}$$

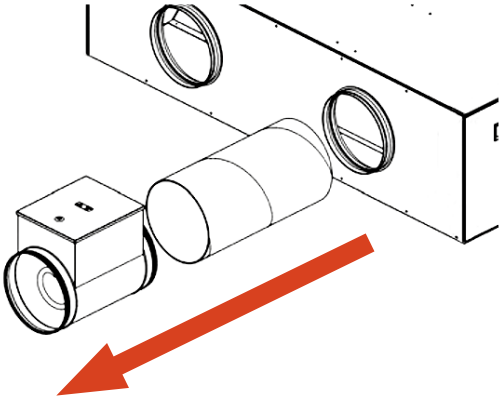
BEP **Antifreeze electric heater**

- Ducted electric heater
- IP 43
- Doubled anti-condensate protection
- PWM control

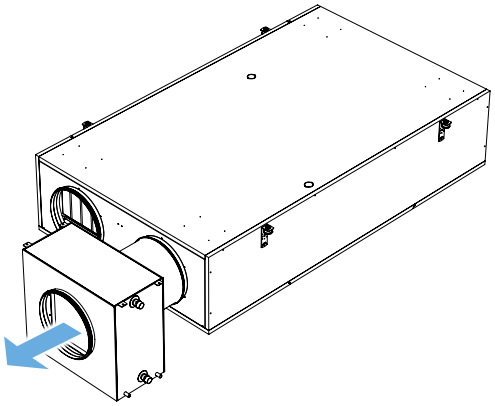


BER **Post-heating electric heater**

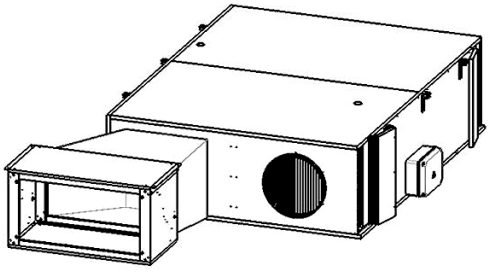
- Ducted electric heater
- IP 43
- PWM control



BAE **Water coil**

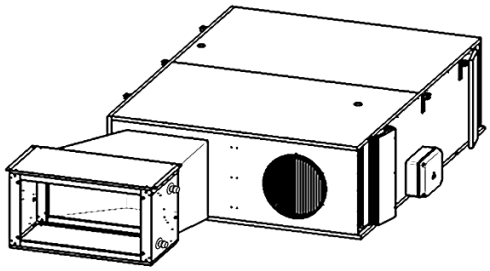


SFE-DP **Auxiliary section with pre-filter and electrostatic filter**



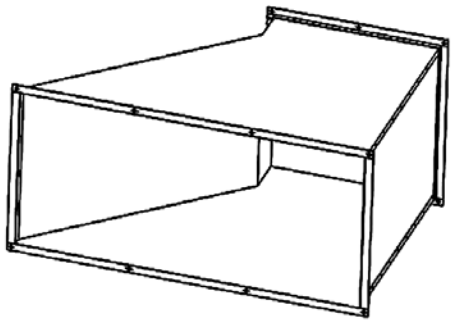
SBF **Auxiliary cooling section with 4 row-coil**

(for horizontal installations only)



ENP **Connecting duct section**

made from galvanised plate, insulated inside with closed cell polyethylene foam.



T-EP **Wall control (mandatory)**

- Nominal speed setting fan supply
- Nominal speed setting fan discharge
- Time setting
- Parameters of operation
- Control fan speed mode
- Manual setting
- Weekly program
- Automatic setting (in case of connection with a CO2-RH external sensor)
- Post heating/cooling setting mode
- Visualization of the operative parameters.

Vertical Energy Plus

Recovery unit

The Energy Plus Vertical versions high-efficiency heat recovery ventilation units are designed to provide centralised air exchange service in commercial environments or residential blocks, complying with ErP 2018 requirements and ensuring high standards of fresh air filtration.

The Energy Plus Vertical units are full fresh air units and are designed to guarantee almost absolute separation of the supply and extraction flows and maximum heat recovery, thanks to the use of static counterflow aluminium plate heat exchangers.

The Energy Plus Vertical versions includes 4 sizes, suitable for floor to wall installation, and covers a range of flow rates from 1100 to 3850 m^3/h.

All the standard units are equipped with the adjustment and control system according to the most advanced logics available in the sector.

Fan adjustment is available with constant flow control, a recommended solution for single zone ventilation system applications, and with constant differential pressure control, a recommended variable air flow rate solution in multi-zone applications with adjustment dampers dedicated to individual zones.

External casing. Structure made up of aluminium frame with Sabiana double recess profile and sandwich panels with double sheet and polyurethane foam insulation.
The 35 mm thick aluminium profiles are shaped to guarantee the double recess of the panels, perfect flatness and maximum ease of cleaning the internal surfaces.
The panels are supplied with a thixotropic gasket that allows the best continuity of the seal towards the outside.
Special attention is paid to internal sealing and insulation in order to avoid any contamination of flows.

Fans. The units are supplied with electronic plug fans equipped with EC synchronous motors with very high electrical efficiency.
The design of the impellers is of the backward curved blade type in order to minimize water leakages.
The design of the supply section is such as to optimize the flows inside and obtain high levels of ventilation efficiency while minimizing inefficiencies and noise.
The fans allow the units to reach available static pressures up to 1000 Pa. Such high pressures may be required in the case of particularly complex multizone applications where, for example, different fire compartments are crossed.
Fans are equipped with a pressure probe on the calibrated nozzle of the fan used in the case of control aimed at the target flow rate.

Heat exchangers. The units are supplied with static counterflow heat exchangers with aluminium plates that have been sized to meet the requirements of the ErP 2018 regulation for ventilation units, both to minimize the pressure drops occurring inside the units and to maximize the heat recovery efficiencies within the expected range of operating flow rates (EN 308 efficiency up to 85% in dry conditions).
The choice of the exchanger is strategic in order to guarantee, besides the energy recovery, also the absence of contamination between the flow that carries the exhaust air, breathed by the internal occupants, and the fresh air coming from outside.

By-pass damper. The units are equipped with by-pass duct in line with the heat exchanger and with damper modulating 100% of the air flow between the path crossing the heat exchanger for heat recovery and the path avoiding it, passing through the same by-pass duct.
In this way the unit can take full advantage of the free air conditioning capacities of the fresh air if available, without affecting the inlet temperature into the environment due to undesired heat recovery.

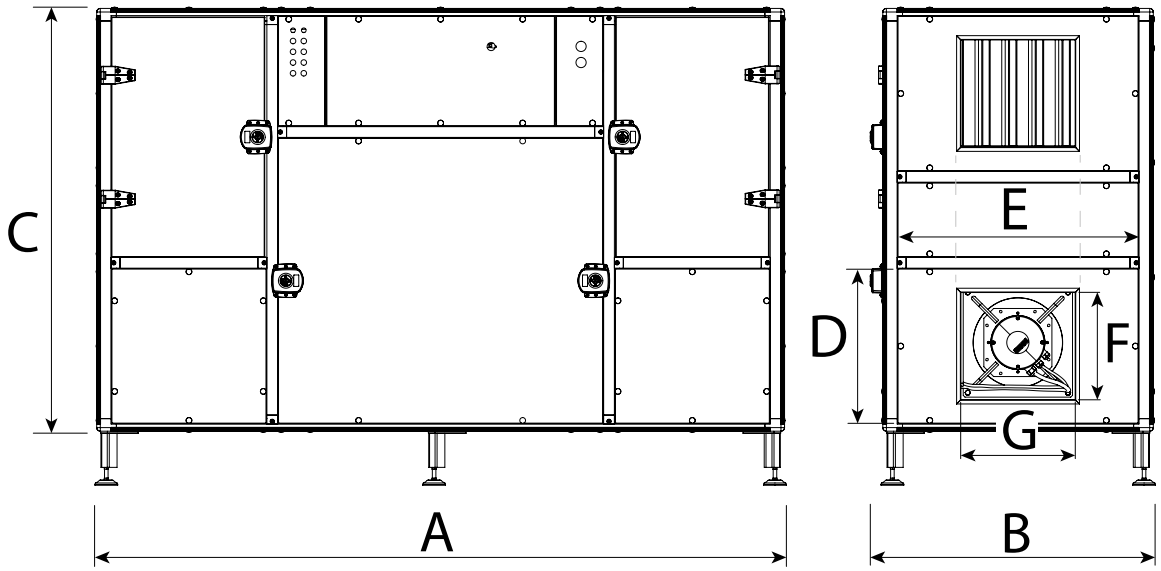
Filters. As proof of the maximum attention paid to the cleanliness of the inlet air and to safeguard the durability of the internal equipment, the units are fitted as standard with ISO ePM_1 55% filters on the fresh air flow and ISO ePM_{10} 55% filters on the outlet flow.
In compliance with the ErP 2018 regulation, in order to facilitate routine maintenance operations, each filtration section is equipped with a differential pressure switch with alarm signal return to the panel.

Adjustment and control system. The units are fully equipped with the necessary electronics and sensors for operational use.

Electric heaters. In the case of application in particularly rigid climatic conditions, the units are also available in a version with integrated electric heater.
The integrated heaters are of the modulating type with the aim of maintaining the air outlet temperature outside the risk of freezing.

Post treatment
By using the ENY-PV Manager software it is possible to set the management of hydronic or electric coils for the unit outlet temperature control (not supplied by Sabiana) it is possible to set a modulating control and/or an ON/OFF.

Dimension and weight



Model	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Weight kg
ENY-PV2	1920	790	1180	433	673	300	320	220
ENY-PV3	2110	1110	1380	443	993	330	450	300
ENY-PV4	2300	1310	1480	443	1193	330	650	400
ENY-PV5	2300	1310	1750	578	1193	465	850	475

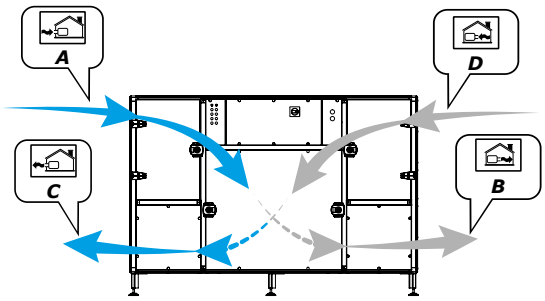
Note: the feet can be adjusted from min. 150 mm to max. 200 mm.

Nominal technical data

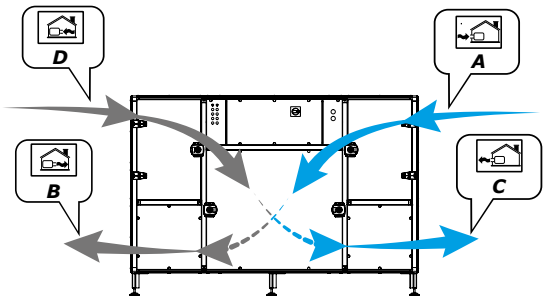
	Udm	ENY-PV2	ENY-PV3	ENY-PV4	ENY-PV5
Nominal flow rate	m^3/h	1100	2000	3000	3850
Nominal available static pressure	Pa	500	500	500	600
EN308 efficiency	%	84,4	84,2	84	83
Sound power level radiated by the enclosure LwA	dBA	71,3	70,7	73,8	77,8
Input/output flow	dBA	82,3	81,7	84,8	88,4
Extraction flow/fresh air intake	dBA	76,3	75,7	78,8	82,4
Optional internal heater	kW	4	8	11	13
Standard power consumption (without heater)	-	230-1+N/50Hz	400-3+N/50Hz		
	kW	1,2	1,7	2,6	3,8
Filtration efficiency	-	EN 779 F7 / M6 ISO 16890 ePM_1 55% / ePM_{10} 55%			
Dimensions	mm	1920x755x1180	2110x1075x1380	2300x1275x1480	2300x1275x1750

Factory versions

Left Configuration

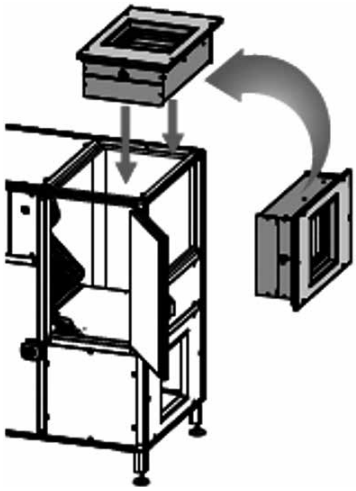


Right Configuration



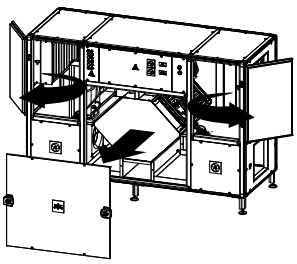
A = Fresh air B = Supply air C = Exhausted air D = Extract air

Side connection from factory or higher modified on the spot

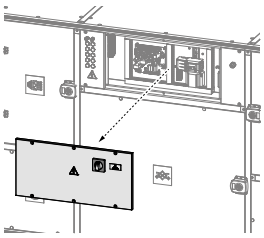


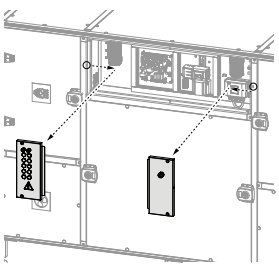
Openings for maintenance

Mechanical inspections

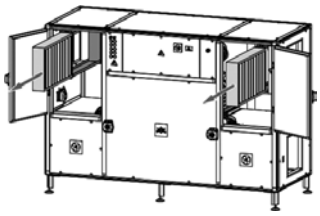


Electrical inspections





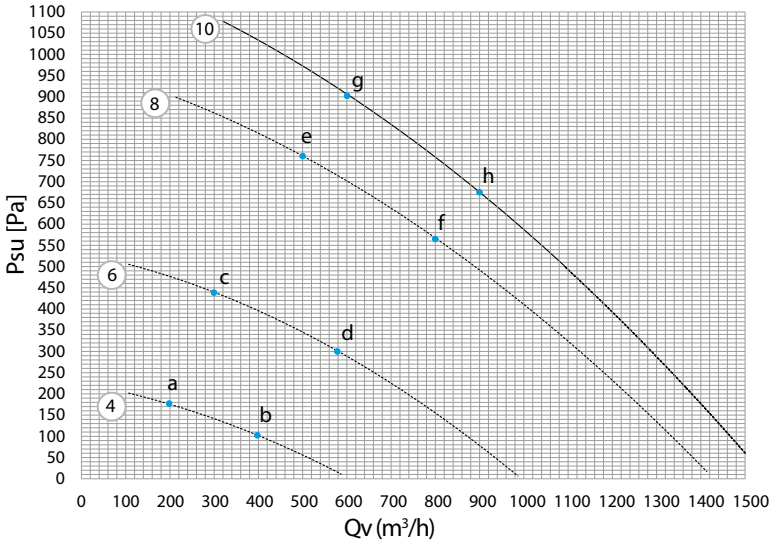
Filter replacement



Typical curves

Units are available from the factory with target flow or differential pressure control.
The following diagrams show the flow rate/available static pressure curves of the units with cleaned filters at the different fan adjustment voltages.
The performance can be used as a reference for both the inlet flow with ePM_1 55% filter and the outlet flow with ePM_{10} 55% filter.

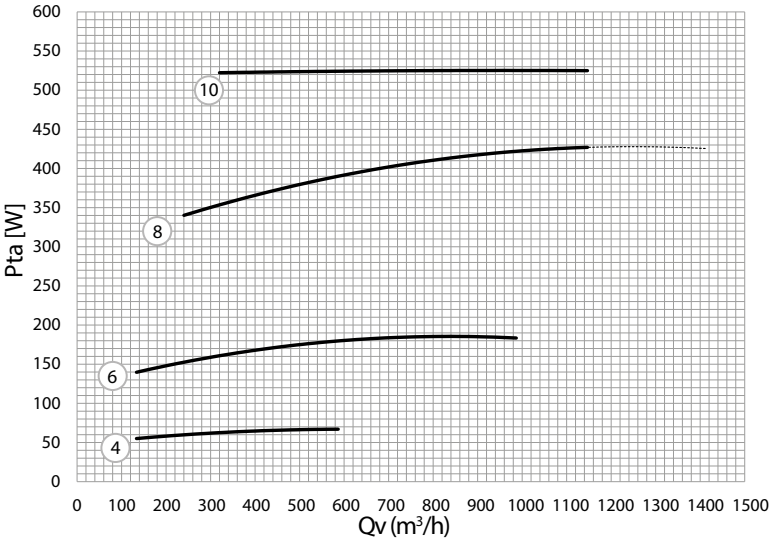
ENY-PV2



(X) = control voltage
Psu = available static pressure
Qv = air flow

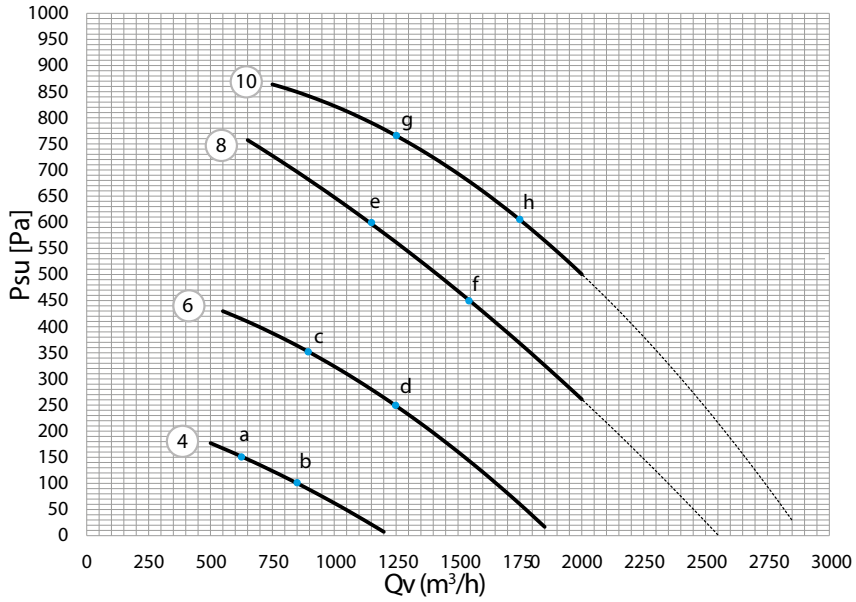
ENY-PV2		a	b	c	d	e	f	g	h
Lw irradiated	dB(A)	57,4	52,7	67,7	64,6	74,5	71,4	76,9	73,4
Lw supply	dB(A)	60,4	55,7	70,7	67,6	77,5	74,4	79,9	76,4
Lw intake	dB(A)	46,4	41,7	56,7	53,6	63,5	60,4	65,9	62,4

Performance and absorptions for single fan ENY-PV2



(X) = control voltage
Pta = power absorption
Qv = air flow

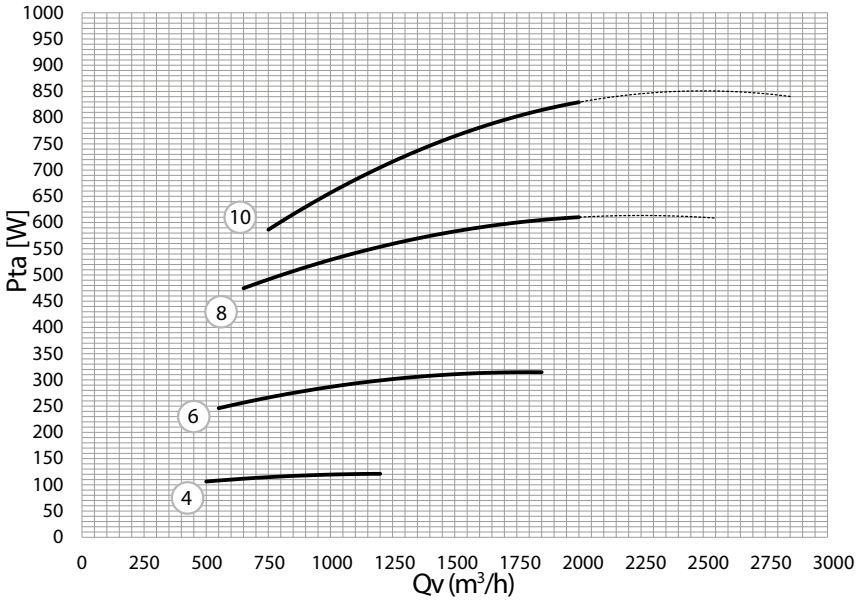
ENY-PV3



(X) = control voltage
Psu = available static pressure
Qv = air flow

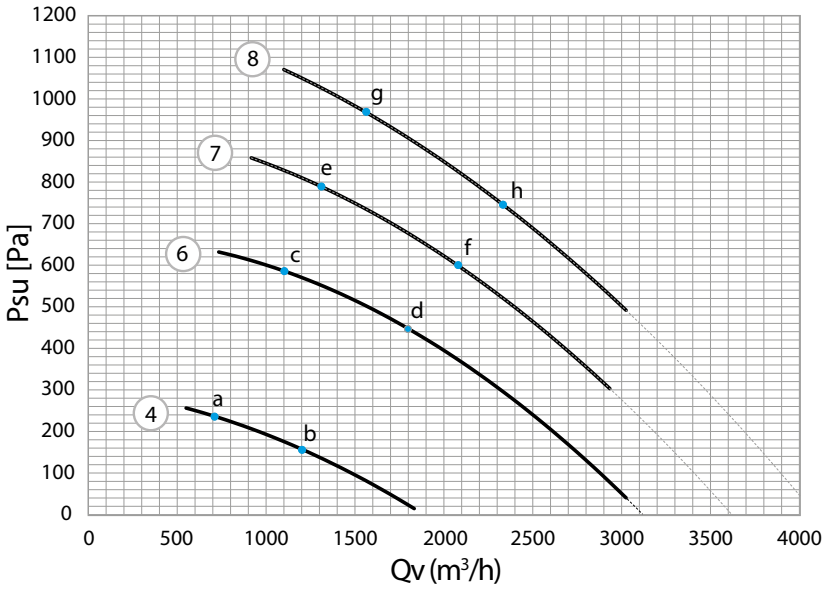
ENY-PV3		a	b	c	d	e	f	g	h
Lw irradiated	dB(A)	59,1	54,9	68,3	63,2	72,8	68,8	75,0	71,7
Lw supply	dB(A)	62,1	57,9	71,3	66,2	75,8	71,8	78,0	74,7
Lw intake	dB(A)	48,1	43,9	57,3	52,2	61,8	57,8	64,0	60,7

Performance and absorptions for single fan ENY-PV3



(X) = control voltage
Pta = power absorption
Qv = air flow

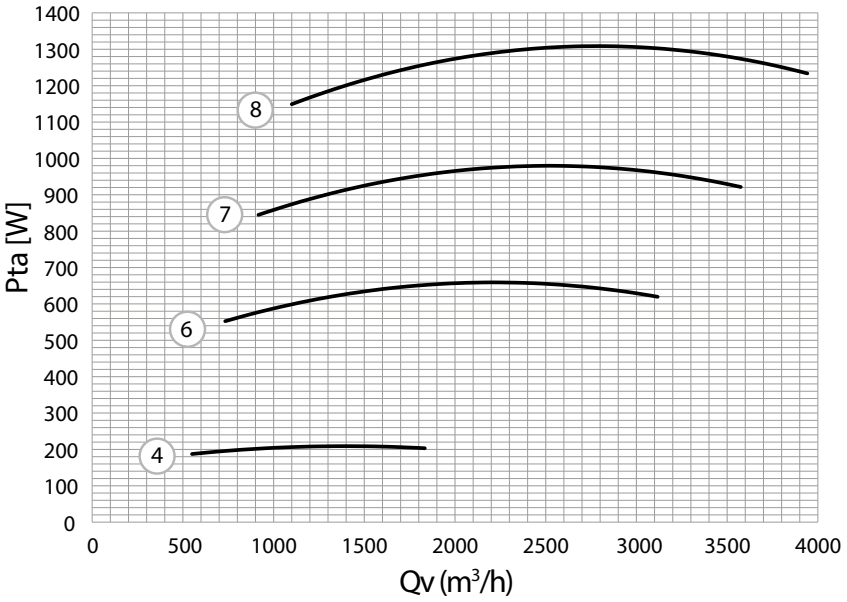
ENY-PV4



(X) = control voltage
Psu = available static pressure
Qv = air flow

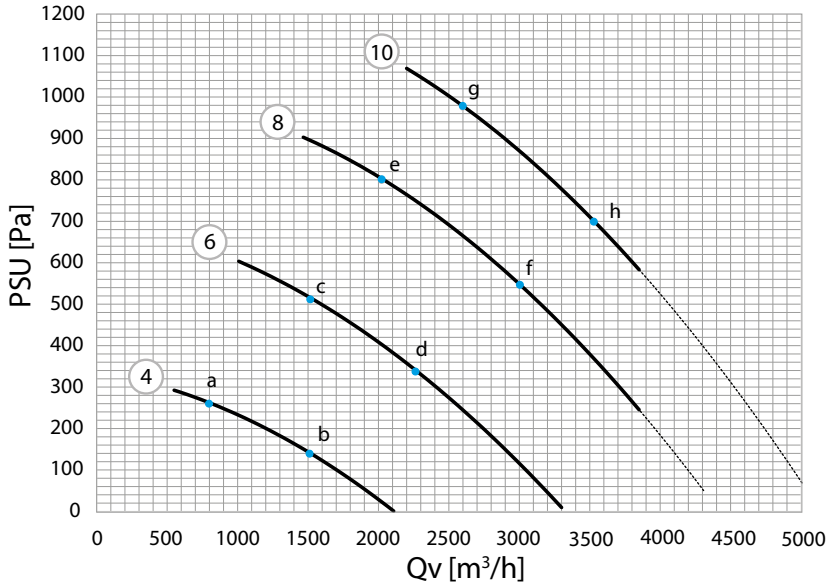
ENY-PV4		a	b	c	d	e	f	g	h
Lw irradiated	dB(A)	61,0	59,7	70,9	69,3	76,4	74,4	77,7	75,4
Lw supply	dB(A)	64,0	62,7	73,9	72,3	79,5	77,5	80,7	78,4
Lw intake	dB(A)	50,0	48,7	59,9	58,3	65,1	63,1	66,7	64,4

Performance and absorptions for single fan ENY-PV4



(X) = control voltage
Pta = power absorption
Qv = air flow
8 VdC max control voltage ENY PV4

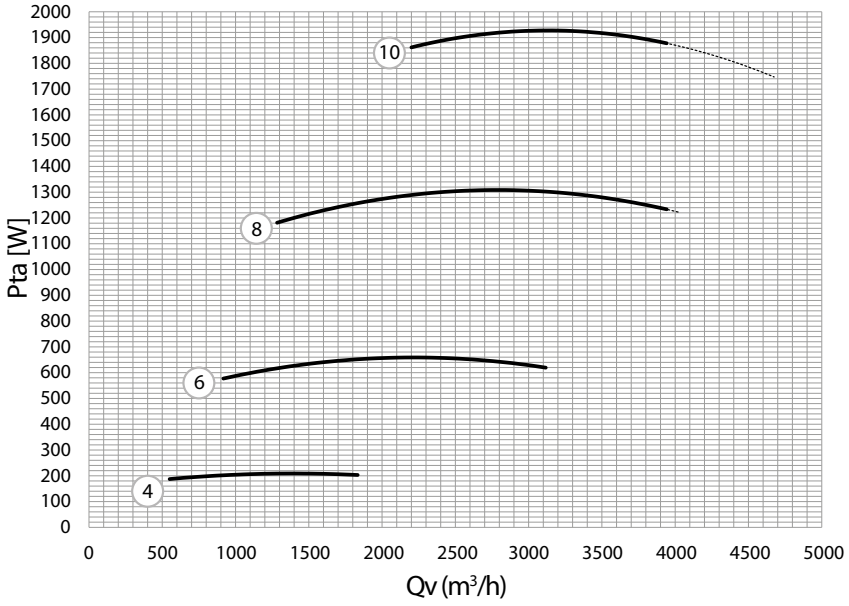
ENY-PV5



(X) = control voltage
Psu = available static pressure
Qv = air flow

ENY-PV5		a	b	c	d	e	f	g	h
Lw irradiated	dB(A)	63,3	60,5	72,3	70,0	78,0	74,9	80,3	77,8
Lw supply	dB(A)	66,3	63,5	75,3	73,0	81,0	77,9	83,3	80,8
Lw intake	dB(A)	52,3	49,5	61,3	59,0	67,0	63,9	69,3	66,8

Performance and absorptions for single fan ENY-PV5



(X) = control voltage
Pta = power absorption
Qv = air flow

Annex EU 1253/14

Trade name of manufacturer	Energy Plus Verticale			
Manufacturer ID	ENY-PV2	ENY-PV3	ENY-PV4	ENY-PV5
Type HRS	Static Countercurrent			
Heat recovery efficiency (%)	84,40	84,20	84,00	83,00
Nominal flow rate of the NRVU (m^3/s)	0,42	0,56	0,83	1,07
Effective electric power consumption (W)	1044	1580	2460	3650
SFP int ($W/m^3/s$)	1384	1345	1280	1230
SFP int_lim 2018 ($W/m^3/s$)	1400	1350	1290	1233
Nominal external pressure Δps, ext (Pa)	500	500	500	600
Front filtration speed at design flow rate (m/s)	2,040	1,633	2,011	1,892
Internal pressure drop of ventilation components Δps, int (Pa)	650,48	769,34	783,76	753,14
Static efficiency of fans used as per Regulation (EU) No. 327/2011	53,90	57,20	61,23	61,23
Declared maximum percentage of external leakage (%) EN 13141-7	< 2	< 2	< 2	< 2
Declared maximum percentage of internal leakage (%) EN 13141-7	< 3	< 3	< 3	< 3
Energy performance or preferably energy classification of filters	Fresh Air ePM_1 55% Indoor Air ePM_{10} 55%			
Description of the visual filter warning signal for NRVUs intended to be used with filters	Each filtration section is equipped with a differential pressure switch that opens the circuit of an ohmic line directly reported to the electronic board. When the limit fouling is reached, beyond which it is advisable to replace the filter, the signal is perceived by the board and is sent back to the user interface display, with the indication of the signalling code. The filter replacement alarm is enabled for information purposes only and does not affect the functionality of the ventilation unit, which remains unchanged.			
Sound power level at the enclosure (LwA))	71,30	70,70	73,80	77,80
Internet address with disassembly instructions	www.sabiana.it			
Fan efficiency for effective power calculation (%)	47	61	65	66
Filter front area filters (m^2)	0,207	0,340	0,414	0,565

PL-LINK

- Digital single-color liquid crystal wall control
- Multi-screen display with menus selectable by buttons
- Backlit screen
- Features:
  - Ventilation mode setting
  - Selection and modification of the weekly programme
  - Management of warnings and alarms
  - Setting the clock
  - Standby

Modbus

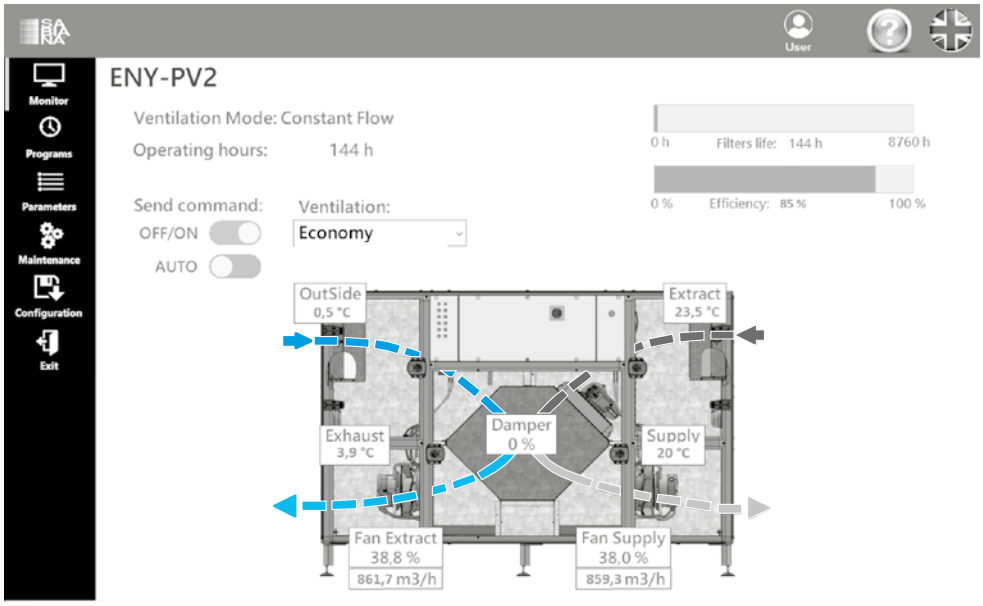
The Modbus RS485 protocol for integration into compatible BMS systems is available on request. .

ENY-PV Manager

ENY-PV Manager, a software tool for PC, necessary to modify the factory operative parameters, is available on the Sabiana webgate.

The tool can be used connecting the PC to the Ethernet port on the board and, using BACnet communication, achieves different levels of operation:

- Basic features:
  - Target value settings for custom flow rates or differential pressures
  - Weekly programme setting
  - Displays of status, warnings and alarms
  - Monitoring of unit operating variables
- Advances features:
  - Operative parameters change
  - Modification of electronic board configurations for addition of optional functions or maintenance operations with restoration

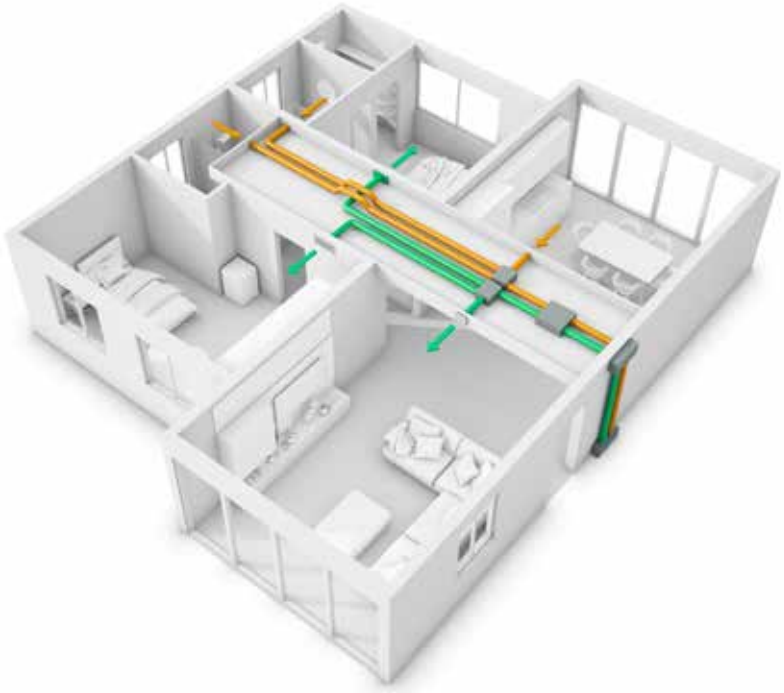


Energy VAV

Air flow restrictor

The Energy VAV are compact units for the regulation of variable air flow rate; with the Energy VAV the supply air and the aspiration air is distributed and partialized in every room according to one's own need (by using an air flow restrictor).
The Energy VAV units are extremely adaptable and can be used for both, residential and commercial environments.
Furthermore the Energy VAV are devices easy to install and to put into operation as they are stand-alone with no need to be interfaced with the centralized ventilation unit.
The desired flow rate for both, the supply air and the extracted air from the interior environments is continuously assured by regulation dampers completely integrated within the unit and managed by electronic board fitted on the unit, with reduced dimensions and ease of installation.

The units are moreover equipped with an automatic air flow control system operated by an integrated humidity sensor located in the extraction air duct.
If the humidity of the indoor environment exceeds the reference parameters, to prevent the proliferation of mould and pathogenic bacteria, the fresh air flow is increased with the aim of restoring a healthy humidity level. The control also prevents from dropping below excessively low humidity levels, thus preventing excessively dry conditions inside the environments and, as a result, any health hazards. The units are NOT able, by themselves, to lower the level of internal humidity to a value below that of the air provided by the centralised ventilation unit.



The Energy VAV units assure the maximum emissions and the minimum global consumption of the ventilation system, when they are used in combination with centralised units able to control the pressure within the ducts.

Compared to the single-zone installations, in the multi-zone installations (systems with flow rate regulation dampers) it is preferable that the central unit reacts to the pressure fluctuations due to the variation of the position of the installation dampers, by modulating the flow rate provided in accordance to the each interior's need.

To optimize the installations it is possible to combine for e.g. the ENY-VAV units with the Vertical Energy Plus centralised ventilation unit in the configuration with steady* differential pressure.

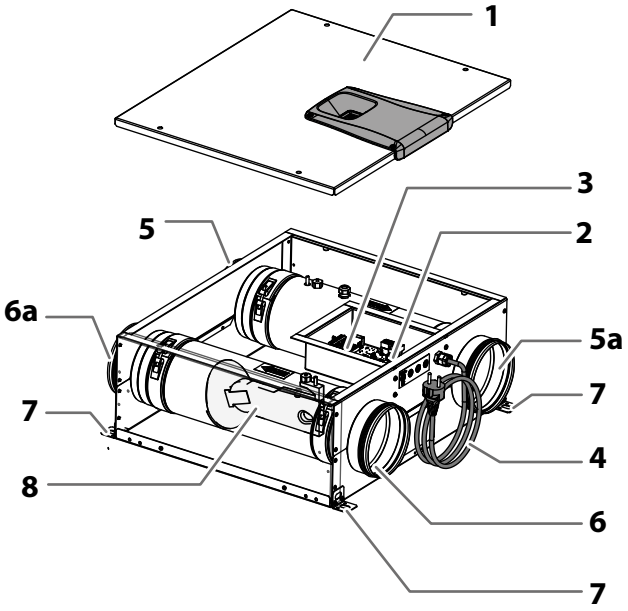
*Unit to select within the configuration ENY-PV DP

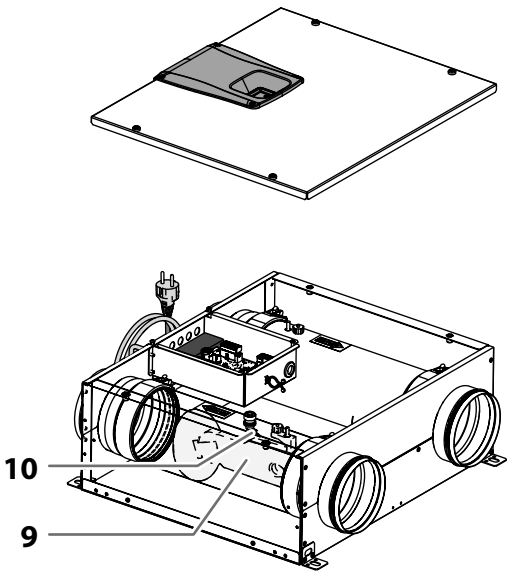
It is moreover possible to install a wall **remote control user interface** (optional T-EP control);
There is a choice of 8 weekly programs for these units: 4 preset programs and 4 free programs that can be modified as required. The operation can be selected in various intervals of the day, at one of the **4 standard speeds**, or at the hyperventilation speed "**Party**". At any time, the user may force the programming manually, which will resume at the beginning of the next time interval.

In the manual mode, in addition to the nominal speed, **there are 3 default speeds equal to 70%, 45%, and 25% of the project flow rate**. The timed intensive ventilation modes can be activated via the user interface ("Party" mode) or via a remote switch located in a particular room ("Booster" mode).

The Energy VAV units can be used in combination with the Energy SIL silencer box able to limit significantly the level of noise entered into the ambients, by improving the acoustic comfort.
The Energy SIL silencer box assures the maximum installation flexibility. As a matter of fact, the accessory can be directly connected to the ENY-VAV air flow restrictor or freely dislocated within the installation.

Description of the components





1 Frontal panel
made of hot-dip galvanised steel sheet panels painted in RAL 9003 and satin finish obtained with epoxy paint dried in oven at 180 °C.

2 Main power board
Main power board with built-in display, easy to use for calibration and unit commissioning.

3 Control display

4 Power supply cable

5-5a-6-6a Stainless steel air distribution connections for inlet/outlet air flows

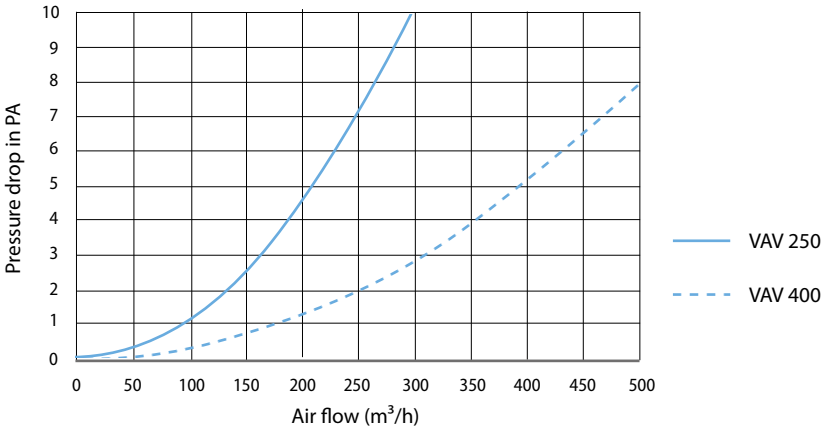
7 Suspension brackets

8-9 Integrated air flow rate modulating damper

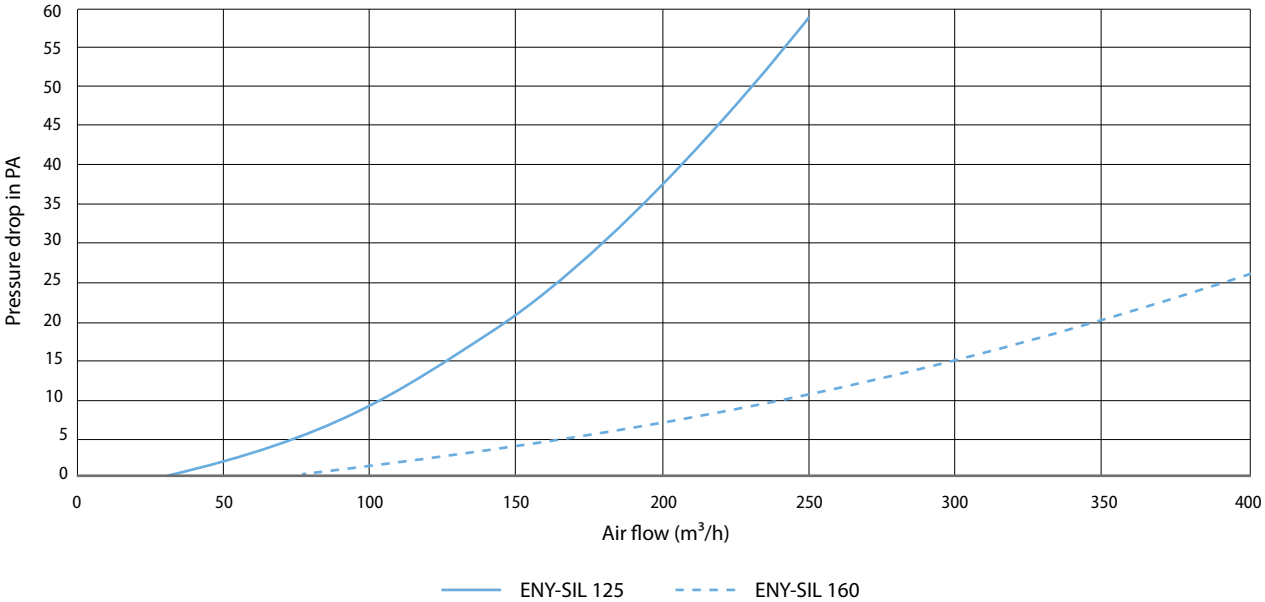
10 Temperature and humidity probe

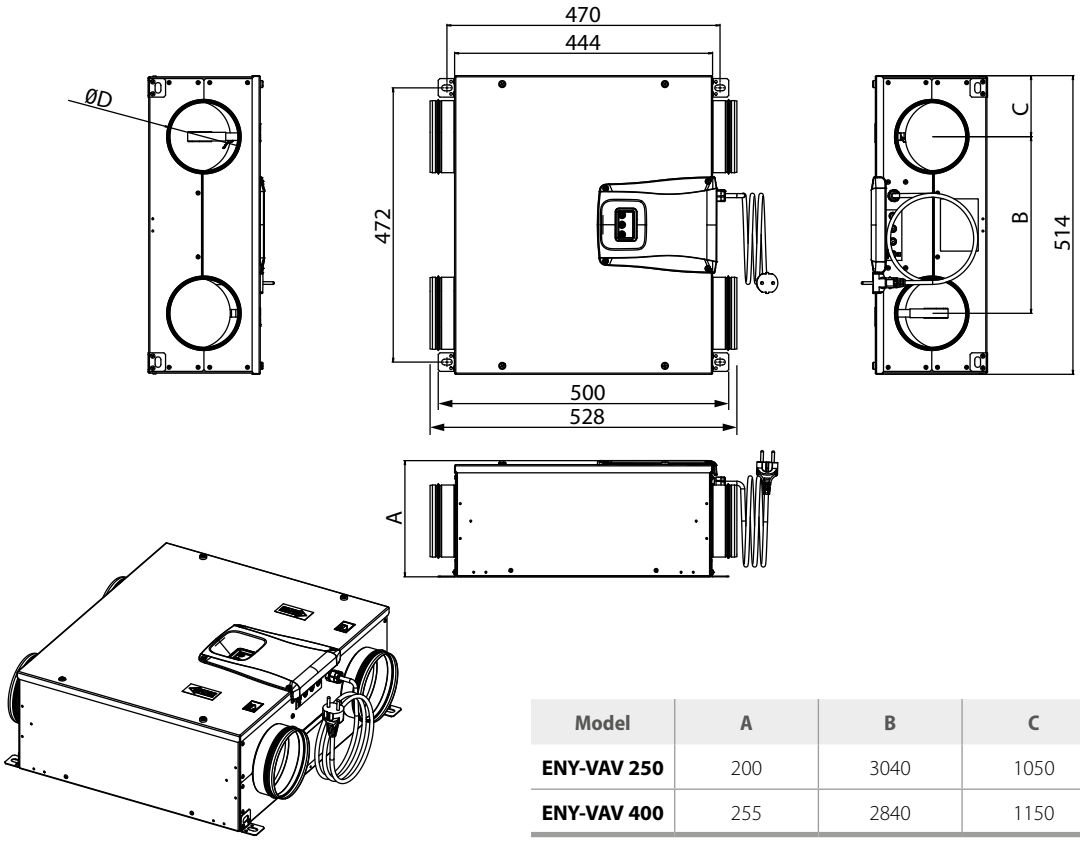
Model		ENY-VAV 250	ENY-VAV 400
Length	mm	528	
Width	mm	514	
Height	mm	200	255
Diameter of Connections	-	125	160
Weight	kg	10,3	11,3
Packaged unit weight	kg	12	13
Maximum Flow rate	m³/h	250	400
Minimum useful static pressure	Pa	11	10
Reference flow rate	m³/h	175	300
Minimum calibration rate	m³/h	75	120
Maximum absorbed power (motors and controls)	W	4,7	
Maximum absorbed current (motors and controls)	mA	58	
Power supply	-	Single-phase - 230 V - 50 Hz	
Consumption in stand-by	-	< 1W	

Minimum pressure drop with opened damper



VAV Silencer Pressure drop

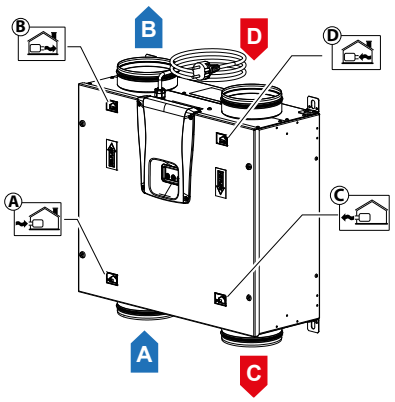




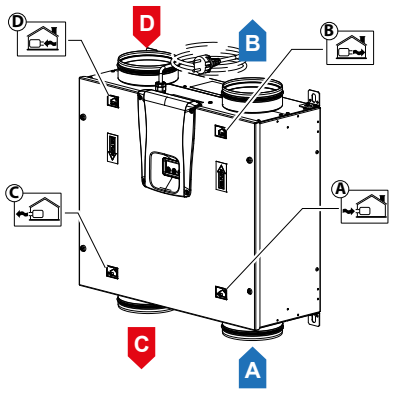
Model	A	B	C	ØD
ENY-VAV 250	200	3040	1050	125
ENY-VAV 400	255	2840	1150	160

Installation Type

Vertical unit ENY-VAV (left)

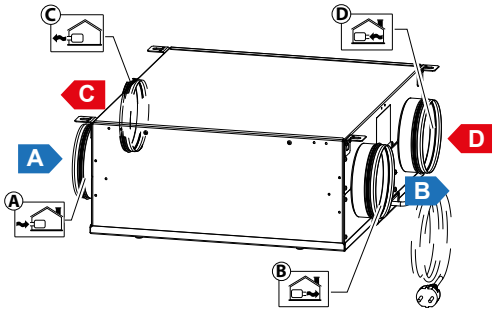


Vertical unit ENY-VAV (right)

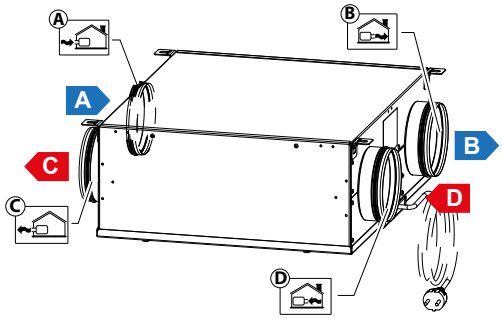


A Air supply inlet
B Air supply outlet
C Stale exctracted air outlet
D Stale exctracted air inlet

Horizontal unit ENY-VAV (left)



Horizontal unit ENY-VAV (right)



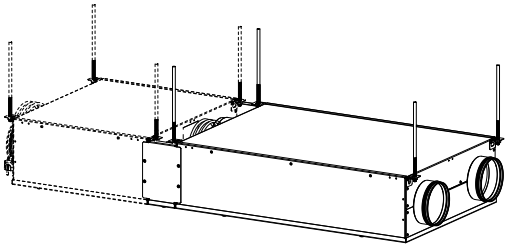
Energy SIL

Silencer

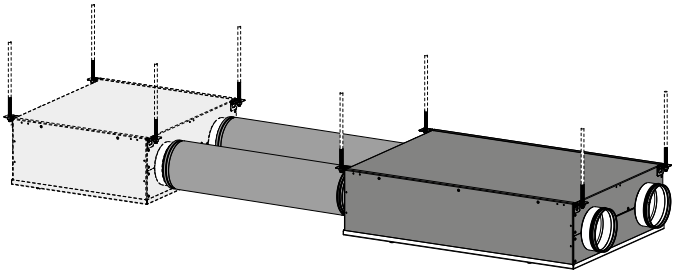
The Energy SIL silencer is able to limit significantly the level of noise entered into the environments, by improving the acoustic comfort.
The silencer is available in two models : with air distribution connections for ducts of diameter 125 mm and for air distribution connections of diameter 160 mm.
The Energy SIL silencer box assures the maximum installation flexibility. As a matter of fact the accessory can be directly connected to the ENY-VAV air flow restrictor or freely dislocated within the installation.

Mounting and silencer installation

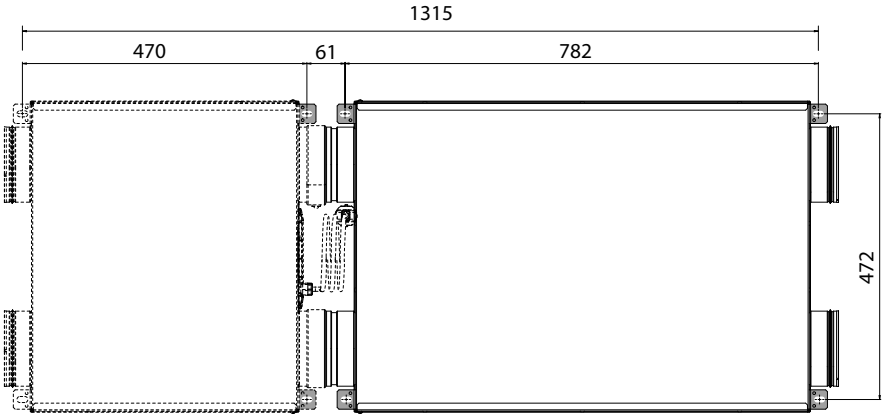
Compact mounting



Detached mounting



Silencer dimensions



Model	h (mm)	kg
DN125	200	14,2
DN160	255	16,3

Energy Smart

Recovery Unit

The Sabiana Energy Smart units are high efficiency ventilation units with heat recovery and are designed for residential ambiences.

The units replace the exhaust air of indoor environments with filtered air coming from the outside thanks to a special high efficiency ePM_1 55% - F7 class filter.

The hexagonal counterflow recovery unit prevents any winter heat drops due to the introduction of fresh air, thereby recovering up to 92.5% of the extracted heat and conveying it to the clean air introduced in the occupied environment.

Depending on requirements and climatic conditions, one can choose the heat exchanger that acts only on temperature (sensible) or also on humidity (enthalpic).

The latter is able to transmit both humidity and heat, taken from the extracted air, to the fresh intake air, thus preventing the indoor air from becoming too dry.

The enthalpy heat exchanger is available as an option for all Energy Smart units except the SHP-150 model.

Each unit is also equipped with an average efficiency filter (ePM_{10} 50% - M5) installed on the inlet of the extraction section to prevent any dust from getting into the equipment.

All Energy Smart units comply with the 2018 efficiency limits imposed by Regulation 1253/14.

The Pro versions are equipped with an automatic centralised air flow control system operated by an integrated humidity sensor located in the extracted air duct. If the humidity of the indoor environment exceeds the reference parameters, to prevent the proliferation of mould and pathogenic bacteria, the fresh air flow is increased with the aim of restoring a healthy humidity level. The control also prevents from dropping below excessively low humidity levels, thus preventing excessively dry conditions inside the environments and, as a result, any health hazards. The units

are NOT able, by themselves, to lower the level of internal humidity to a value below that of the outdoor. All the units can be controlled by means of a **supervisory system** in accordance with the following protocols:

- **Modbus**, with direct access to the dedicated RS 485 web gateway
- **Konnex**, with KNX interface board (optional)

As well as the type of installation, the range can also be classified according to the type of control:

- **Pro unit** with automatic centralised control via humidity probe:
  ENY-SP (vertical)
  ENY-SHP (horizontal/vertical)
- **Standard unit** with time programming control:
  ENY-S (vertical)

ENY-SP and ENY-S units are designed for vertical wall installation or, with the addition of feet, floor installation. The ENY-SP-225 unit, very compact, is designed for the wall installation inside a standard ceiling unit for the kitchen or the wardrobe. Instead, ENY-SHP units are ideal for both horizontal ceiling installation and vertical wall installation. The width of the ENY-SHP and ENY-S units is such as to ensure easy insertion into modular kitchen components, since the width is less than 600 mm.

Energy Smart SHP 150

Energy Smart SP-225

ENY-SP and ENY-S
vertical Energy Smart units

The Pro Versions are available in Class A + while the Standard versions are in Class A. Both are equipped with high efficiency backward-curved blades and EC motors,, driven by the integrated inverter control board for variable speed control.

All units have a remote control user interface (T-EP control), integrated in the inspection cover of ENY-SP and ENY-S units; for the latter, it is also possible to disconnect the interface from the inspection cover and place it on the wall using a special cable.

The Pro versions are Passivhaus certified and are equipped with a centralized automatic flow rate control system, that works not only in accordance with a built-in humidity sensor, but also in response to CO_2 measurements. In this case, it is recommended to connect a 0-10V CO_2 sensor to the main control board, available on the market.

CHARACTERISTICS

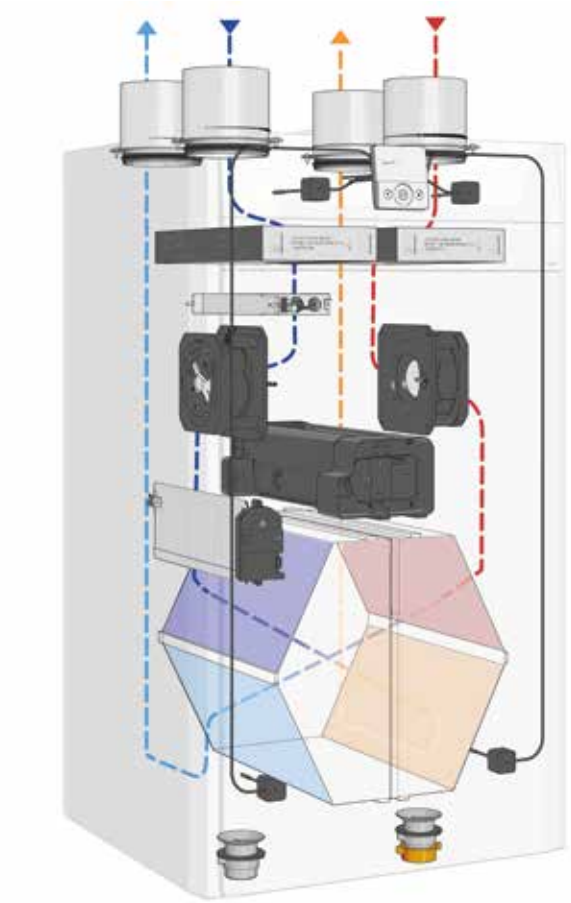
The units with automatic control via humidity or CO_2 sensor can enable the "AUTO" mode. In this mode, the fan speed is controlled by an automatic control cycle relating to internal instantaneous humidity and CO_2 variations. In variable-flow automatic control mode, the user can still intervene at any time by changing the fan speed manually as required. The automatic mode will be restored at the next significant variation of ambient humidity or concentration of CO_2.

In the event that the user does not require automatic control but just simply time programming or even manual control, standard units are ideal.

There is a choice of 8 weekly programs for these units: 4 preset programs and 4 free programs that can be modified as required. The operation can be selected in various intervals of the day, at one of the **4 standard speeds**, or at the hyperventilation speed **"Party"**. At any time, the user may force the programming manually, which will resume at the beginning of the next time interval.

In manual mode, in addition to the nominal speed, **there are 3 default speeds equal to 70%, 45%, and 25% of the project flow rate**. The timed intensive ventilation modes can be activated via the user interface ("Party" mode) or via a remote switch located in a particular room ("Booster" mode).

All the units are equipped with an automatic bypass system that totally disables use of the recovery unit to permit 100% **free-cooling** (or **free-heating**). The system is controlled by logic subject to the feedback of the embedded temperature sensors.



Also, the units have the following integrated control logic:

- The mass supply flow defined by the user is kept constant in all outdoor climatic conditions.
- The extraction flow is kept at a constant balancing percentage compared to the air supply flow, in order to preserve the desired overpressure or negative pressure for all operating conditions.

When installing the units in homes located in regions with particularly harsh climatic conditions, we recommend installing the units with integrated filament electric heaters (E versions), where the thermal power is continuously modulated to maintain exhaust air at the desired temperature, preventing freezing. For all models, it is possible to use an external antifreeze coil, with continuous modulation available as accessory on price list.

To prevent excessive efficiency drops due to filter clogging, it is recommended to replace the filters at the end of the recommended period (usually every 6 months). The increase in filter dirt in fact leads to increased fan rotation resistance, causing a significant drop in flow rates. With regard to ENY S units, the automatic constant flow control system (standard for the ENY-SP units), which prevents any drops in flow rates due to filter clogging, is available as an accessory. In this case, filter clogging may result in a significant increase in power consumption of the fans.

If the flows need to be inverted, all units are reversible during installation (except for versions with electric heater).

For each model, a complete set of Accessories is also available to meet any installation need.

ENY-SHP
horizontal and vertical Energy Smart units

The Energy Smart horizontal units are available in three sizes ENY-SHP-150 ENY-SHP-170 and ENY-SHP-270 both in the Pro version only, that means they are equipped with an automatic centralized air flow control system operated by an integrated humidity sensor located in the extract air duct. They are ideal for both horizontal ceiling installation and vertical wall installation; sizes 150 and 170 are Passivhaus certified.

The **SHP-150** size is distinguished by its extremely compact dimensions that make it easy to install in a false ceiling. The unit is equipped with a fitted control panel, that lets the calibration and activation of the unit.

The Energy Smart ENY-SHP-150 unit can be connected to the T-EP remote control panel accessory to activate the following additional functions:

- Party Mode.
- Holiday Mode.
- Free cooling Mode: a single supply air flow to activate manually.
- There is a choice of 8 weekly programs for these units: 4 preset programs and 4 free programs that can be modified as required.
- Fan speed regulation by means of the T-EP touch pad by selecting one of the 3 default speeds equal to 70%, 45%, and 25% of the project flow rate.

The **SHP-170** size, like the Energy Smart Pro vertical units, is equipped with a motorized bypass system with a double damper, that totally disables use of the heat recovery unit to permit 100% free-cooling (or free-heating) automatically and it is equipped as standard with a T-EP control panel.

The ENY-SHP-170 is also available with integrated filament electric heaters (E version), in which the thermal power is continuously modulated to keep the exhaust air at the desired temperature, thereby preventing any freezing.

The **SHP-270** is distinguished by the perfect blend between compact dimensions and high air flows. The unit is equipped as standard with a T-EP control panel.

The ENY-SHP-270 is equipped with a motorized bypass system with a double damper, that totally disables the heat exchange between the air flows to permit 100% free-cooling (or free-heating) automatically.

The ENY-SHP-270 is also available with integrated filament electric heaters (E version), in which the thermal power is continuously modulated to keep the exhaust air temperature always within the safety limits, thereby preventing any freezing.

The ENY-SHP-270 is also equipped as standard with two humidity sensors and an advanced flow control system which allows an optimal control of the environment hygrometric conditions.

If in need of heating or cooling the air supplied to the ambient, different features are available for the supply and regulation of the post-treatment systems.

The valves of the post-treatment sections can be controlled by the electronic board fitted on the Energy Smart SHP-270 unit.

Vertical version with T-EP built-in/wall control

Pro Version

Version	Model	Max flow at 100 Pa (m^3/h)	Energy class	Width (mm)	Humidity Sensor	Automatic air flow control	Code
Pro	ENY-SP-180	180	A+	600	✔	✔	021B001
	ENY-SP-225	225	A	547	✔	✔	021V001
	ENY-SP-280	280	A+	600	✔	✔	021B002
	ENY-SP-370	370	A+	660	✔	✔	021B003
	ENY-SP-460	460	A	660	✔	✔	021B004
	ENY-SP-600	600	A	660	✔	✔	021B005
Pro with LH electric heater	ENY-SPEL-180	180	A+	600	✔	✔	021B011
	ENY-SPEL-225	225	A	547	✔	✔	021V011
	ENY-SPEL-280	280	A+	600	✔	✔	021B012
	ENY-SPEL-370	370	A+	660	✔	✔	021B013
	ENY-SPEL-460	460	A	660	✔	✔	021B014
	ENY-SPEL-600	600	A	660	✔	✔	021B015
Pro with RH electric heater	ENY-SPER-180	180	A+	600	✔	✔	021B021
	ENY-SPER-225	225	A	547	✔	✔	021V021
	ENY-SPER-280	280	A+	600	✔	✔	021B022
	ENY-SPER-370	370	A+	660	✔	✔	021B023
	ENY-SPER-460	460	A	660	✔	✔	021B024
	ENY-SPER-600	600	A	660	✔	✔	021B025

Standard Version

Version	Model	Max flow at 100 Pa (m^3/h)	Energy class	Width (mm)	Humidity Sensor	Automatic air flow control	Code
Standard	ENY-S-170	170	A	550	(*)	(**)	021A001
	ENY-S-270	270	A	550	(*)	(**)	021A002
	ENY-S-360	360	A	550	(*)	(**)	021A003
	ENY-S-460	460	A	660	(*)	(**)	021A004
	ENY-S-600	600	A	660	(*)	(**)	021A005
Standard with LH electric heater	ENY-SEL-170	170	A	550	(*)	(**)	021A011
	ENY-SEL-270	270	A	550	(*)	(**)	021A012
	ENY-SEL-360	360	A	550	(*)	(**)	021A013
	ENY-SEL-460	460	A	660	(*)	(**)	021A014
	ENY-SEL-600	600	A	660	(*)	(**)	021A015
Standard with RH electric heater	ENY-SER-170	170	A	550	(*)	(**)	021A021
	ENY-SER-270	270	A	550	(*)	(**)	021A022
	ENY-SER-360	360	A	550	(*)	(**)	021A023
	ENY-SER-460	460	A	660	(*)	(**)	021A024
	ENY-SER-600	600	A	660	(*)	(**)	021A025

(*) Humidity Sensor available as accessory (**) Pressure transducer for the automatic control of air flow rates, available as accessory
(***) T-EP wall control available as accessory

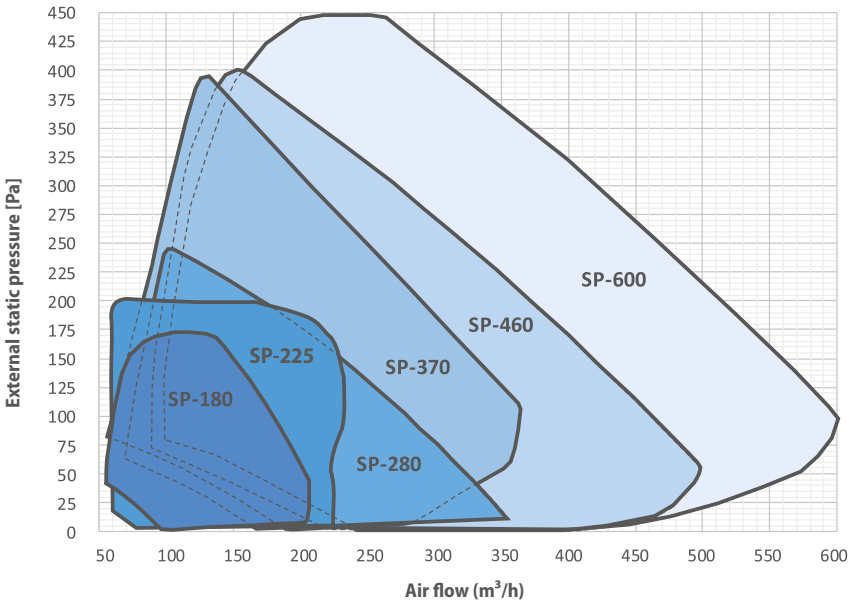
Horizontal and vertical version

Version	Model	Max flow at 100 Pa (m^3/h)	Energy class	Height (mm)	Humidity Sensor	Autom. air flow control	T-EP	Code
Pro	ENY-SHP-150	150	A	191	✔	✔	(***)	021C002
	ENY-SHP-170	170	A+	330	✔	ND	✔	021C001
	ENY-SHPL-270 (1)	270	A	278	✔ (3)	✔	✔	021C003
	ENY-SHPL-270 (2)	270	A	278	✔ (3)	✔	✔	021C003D
Pro left range with electric heater	ENY-SHPEL-170	170	A+	330	✔	ND	✔	021C011
	ENY-SHPEL-270	270	A	278	✔ (3)	✔	✔	021C013
Pro right range with electric heater	ENY-SHPER-170	170	A+	330	✔	ND	✔	021C021
	ENY-SHPER-270	270	A	278	✔ (3)	✔	✔	021C023

(1) left configuration (2) right configuration (3) double sensor

Energy Smart units are suitable for operation in balanced or slightly unbalanced flow and return conditions. They ensure residential air exchange, recovering the heat from the extracted air and conveying it to the clean air.
The chart below shows the recommended operating ranges in terms of volumetric supply air flow rate at standard conditions and available external static pressure.

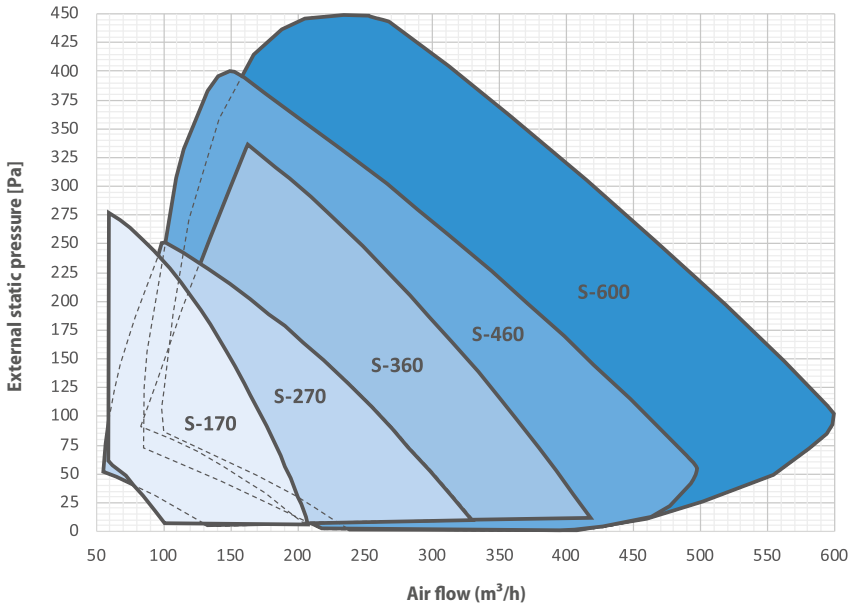
Pro ENY-SP vertical version



Model		ENY-SP-180	ENY-SP-225	ENY-SP-280	ENY-SP-370	ENY-SP-460	ENY-SP-600
Q_{max}	m³/h	180	225	280	370	460	600
Q_{rif}	m³/h	130	158	200	260	320	420
P_{el}	W	23	47,4	35	47	76	105
$\eta^t_{\_rvu}$	%	91,5%	89,0%	91,4%	92,5%	88,6%	88,0%
SPI	W/m³/h	0,174	0,3	0,174	0,179	0,237	0,247
CTRL	-	0,85	0,85	0,85	0,85	0,85	0,85
SEC	kWh/m²a	-42,32	-38,6	-42,29	-42,47	-40,10	-39,71
Energy class	-	A+	A	A+	A+	A	A
Filter efficiency	-	ePM_1 55% - F7 ePM_{10} 50% - M5					
L_{WA}	dB(a)	38,9	43	43,1	46,3	47,9	52,4
LK_I	%	1,2%	1,7%	0,7%	0,5%	0,3%	0,60%
LK_E	%	1,7%	1,8%	1,0%	0,8%	0,7%	1,84%
HEP	W	500	800	900	1250	1600	2000

LEGEND (all terms must be considered in compliance with Standard EU 1253/2014)
Q_{max} = Maximum flow rate, at max motor speed and external static pressure of 100 Pa
Q_{rif} = Reference flow rate - 70% of Q_{max}
P_{el} = Power supply at Q_{rif} and external static pressure of 50 Pa
$\eta^t_{\_rvu}$ = Thermal efficiency at Q_{rif}
SPI = Specific power input
CTRL = Control factor - Centralised automatic control
SEC = Specific energy consumption
L_{WA} = Sound power level emitted by structure
LK_I = Internal leakage at 100 Pa compared to Q_{rif}
LK_E = External leakage at 250 Pa compared to Q_{rif}
HEP = Pre-heater power (only mod. SPEL and SPER)

ENY-S vertical standard version

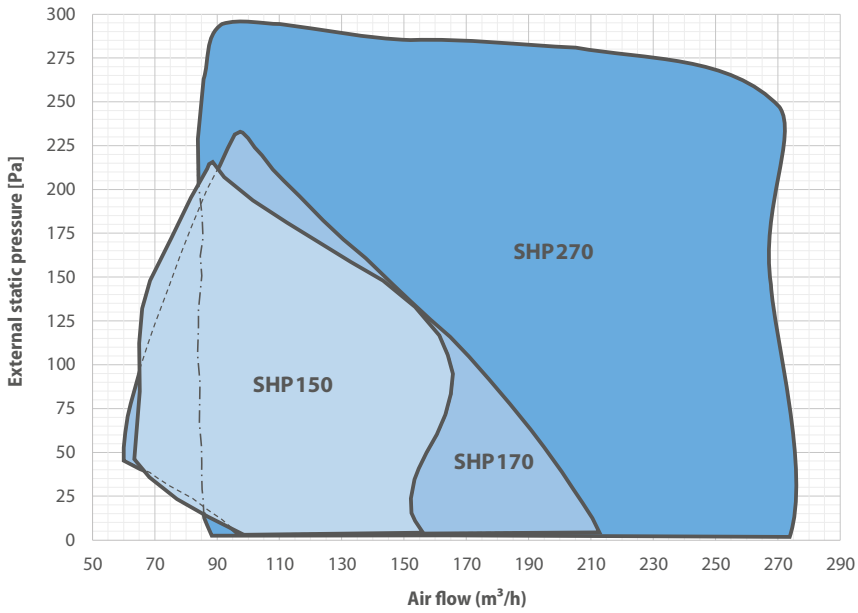


Model		ENY-S-170	ENY-S-270	ENY-S-360	ENY-S-460	ENY-S-600
Q_{max}	m³/h	170	270	360	460	600
Q_{rif}	m³/h	120	190	250	320	420
P_{el}	W	22	35	53	76	104
η^t_{rvu}	%	87,0%	86,5%	90,1%	88,6%	88,0%
SPI	W/m³/h	0,183	0,184	0,209	0,237	0,247
CTRL	-	0,95	0,95	0,95	0,95	0,95
SEC	kWh/m²a	-39,4	-39,3	-39,6	-38,4	-37,9
Energy class	-	A	A	A	A	A
Filter efficiency	-	ePM_1 55% - F7 ePM_{10} 50% - M5	ePM_1 55% - F7 ePM_{10} 50% - M5	ePM_1 55% - F7 ePM_{10} 50% - M5	ePM_1 55% - F7 ePM_{10} 50% - M5	ePM_1 55% - F7 ePM_{10} 50% - M5
L_{WA}	dB(a)	40,6	46,6	49,0	47,9	52,4
LK_I	%	0,4%	0,4%	0,7%	0,3%	0,6%
LK_E	%	1,8%	1,4%	2,7%	0,7%	1,84%
HEP	W	500	900	1250	1600	2000

LEGEND (all terms must be considered in compliance with Standard EU 1253/2014)

Q_{max} = Maximum flow rate, at max motor speed and external static pressure of 100 Pa
Q_{rif} = Reference flow rate - 70% of Q_{max}
P_{el} = Power supply at Q_{rif} and external static pressure of 50 Pa
η^t_{rvu} = Thermal efficiency at Q_{rif}
SPI = Specific power input
CTRL = Control factor - Centralised automatic control
SEC = Specific energy consumption
L_{WA} = Sound power level emitted by structure
LK_I = Internal leakage at 100 Pa compared to Q_{rif}
LK_E = External leakage at 250 Pa compared to Q_{rif}
HEP = Pre-heater power (only mod. SEL and SER)

Pro ENY-SHP version



Model		ENY-SHP-150	ENY-SHP-170	ENY-SHP-270
Q_{max}	m³/h	150	170	270
Q_{rif}	m³/h	105	120	190
P_{el}	W	56	23	47,8
η^t_{rvu}	%	87%	92,1%	84,4%
SPI	W/m³/h	0,227	0,193	0,24
CTRL	-	0,85	0,85	0,85
SEC	kWh/m²a	-39,90	-42,05	-38,9
Energy class	-	A	A+	A
Filter efficiency	-	ePM_1 55% - F7 ePM_{10} 50% - M5	ePM_1 55% - F7 ePM_{10} 50% - M5	ePM_1 55% - F7 ePM_{10} 50% - M5
L_{WA}	dB(a)	38,0	44,9	41,3
LK_I	%	1,8	0,5%	0,4
LK_E	%	0,8	2,3%	1,1
HEP	W	-	600	900

LEGEND (all terms must be considered in compliance with Standard EU 1253/2014)

Q_{max} = Maximum flow rate, at max motor speed and external static pressure of 100 Pa
Q_{rif} = Reference flow rate - 70% of Q_{max}
P_{el} = Power supply at Q_{rif} and external static pressure of 50 Pa
η^t_{rvu} = Thermal efficiency at Q_{rif}
SPI = Specific power input
CTRL = Control factor - Centralised automatic control
SEC = Specific energy consumption
L_{WA} = Sound power level emitted by structure
LK_I = Internal leakage at 100 Pa compared to Q_{rif}
LK_E = External leakage at 250 Pa compared to Q_{rif}
HEP = Pre-heater power (only mod. SHPEL and SHPER)

Pro ENY-SP version (ENY-SP-225 excluded) and Standard ENY-S version

1 ENY-SP version external structure

made of hot-dip galvanised steel sheet panels painted in RAL 9003 and satin finish obtained with epoxy paint dried in oven at 180 °C; the side panels are insulated with a 25 mm thick padding, while the inspection cover is completely removable and is insulated with a 30 mm thick padding.

ENY-S version external structure

made of hot-dip galvanised steel sheet panels painted in RAL 9003 and satin finish obtained with epoxy paint dried in oven at 180 °C; the inspection cover is completely removable and is insulated with a 30 mm thick padding.

2 EPDM fan / heat recovery access closure

3 EPDM filter access closure

4 Electric defrosting pre-heater

Hot filament resistance with reinforced metal lining, controlled by PWM signal (only versions with integrated resistance).

5 High efficiency filters compliant with Standard ISO 16890

The filters have the following features:
- class ePM_1 55% - F7 for the supply air
- class ePM_{10} 50% - M5 for the extracted air

6 ABS shanks for inlet/outlet flow connection

7/11 Extract air (7) and air supply (11) electric fan

consisting of:
- Permanent single-phase synchronous **EC motor** with protection against overtemperature of the motor and electronic components
- High efficiency **ABS fans** with backward-curved blades
- ABS **Motor/fan housing**.

8 High efficiency static recovery unit

with PET counterflow exchange plates.
The reachable efficiency obtainable may be higher than 90% because they ensure counterflow heat transfer between two air flows at different inlet temperatures.
The static recovery units do not feature moving parts and guarantee high reliability and safe operation.
In order to increase the efficiency of the heat exchanger, the plate surfaces feature special swirlers.

9 By-pass damper

made entirely of ABS and motorised with a Valemo actuator.

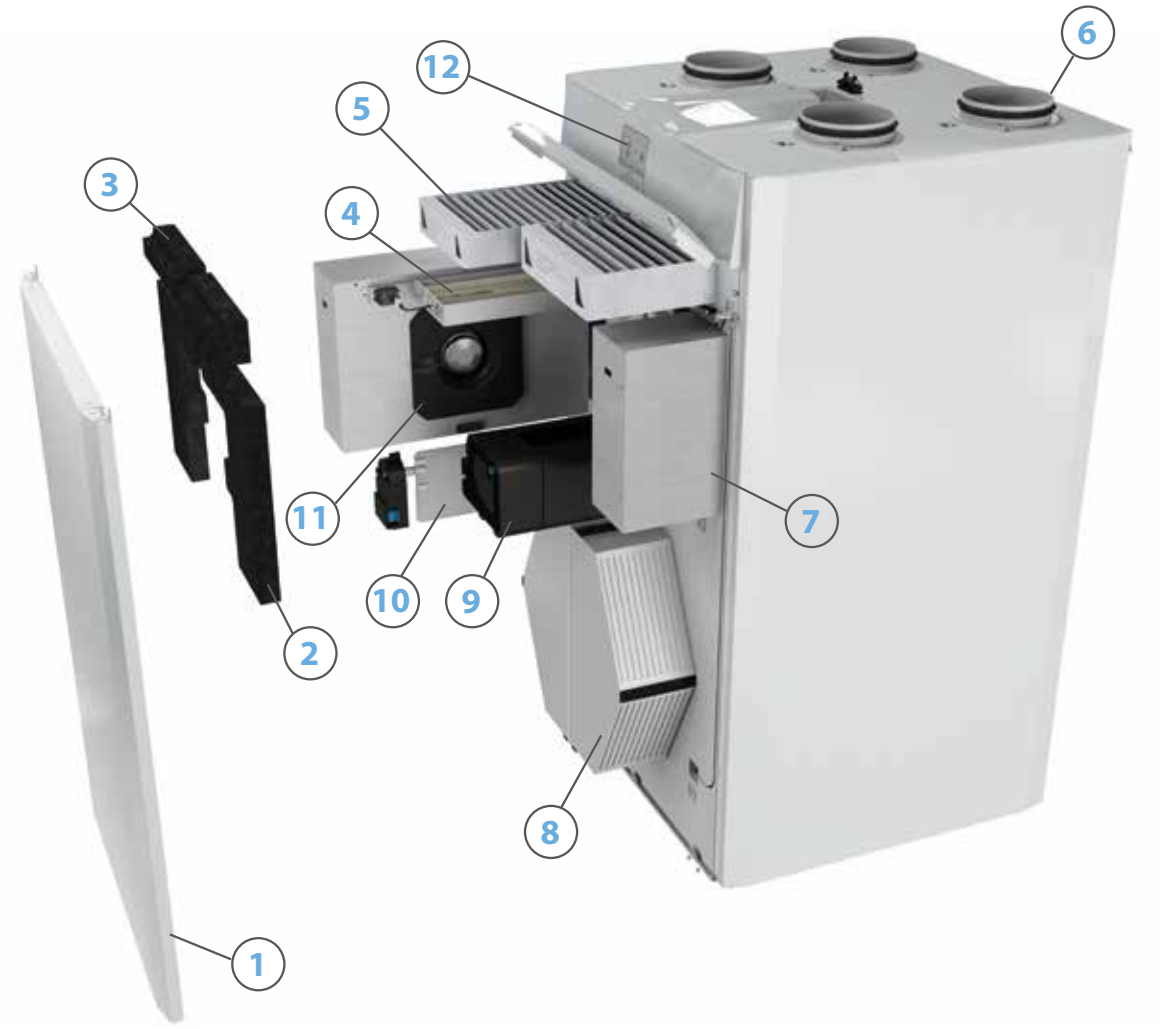
10 Secondary by-pass damper

consisting of a steel blade and motorised with a Valemo actuator (Vertical version only).

12 T-EP control

Pro ENY-SP version (ENY-SP-225 excluded) and Standard ENY-S version

Vertical version



Pro ENY-SP-225 version

1 ENY-SP version external structure

made of hot-dip galvanised steel sheet panels painted in RAL 9003 and satin finish obtained with epoxy paint dried in oven at 180 °C; the side panels are insulated with a 25 mm thick padding, while the inspection cover is completely removable and is insulated with a 30 mm thick padding.

2 Filter access closure

3 Electric defrosting pre-heater

Hot filament resistance with reinforced metal lining, controlled by PWM signal (only versions with integrated resistance).

4 High efficiency filters compliant with Standard ISO 16890

The filters have the following features:
- class ePM_1 55% - F7 for the supply air
- class ePM_{10} 50% - M5 for the extracted air

5 ABS shanks for inlet/outlet flow connection

6/9 Extract air (6) and air supply (9) electric fan

consisting of:
- Permanent single-phase synchronous **EC motor** with protection against overtemperature of the motor and electronic components
- High efficiency **ABS fans** with backward-curved blades
- ABS **Motor/fan housing**.

7 High efficiency static recovery unit

with PET counterflow exchange plates.
The reachable efficiency obtainable may be higher than 90% because they ensure counterflow heat transfer between two air flows at different inlet temperatures.
The static recovery units do not feature moving parts and guarantee high reliability and safe operation.
In order to increase the efficiency of the heat exchanger, the plate surfaces feature special swirlers.

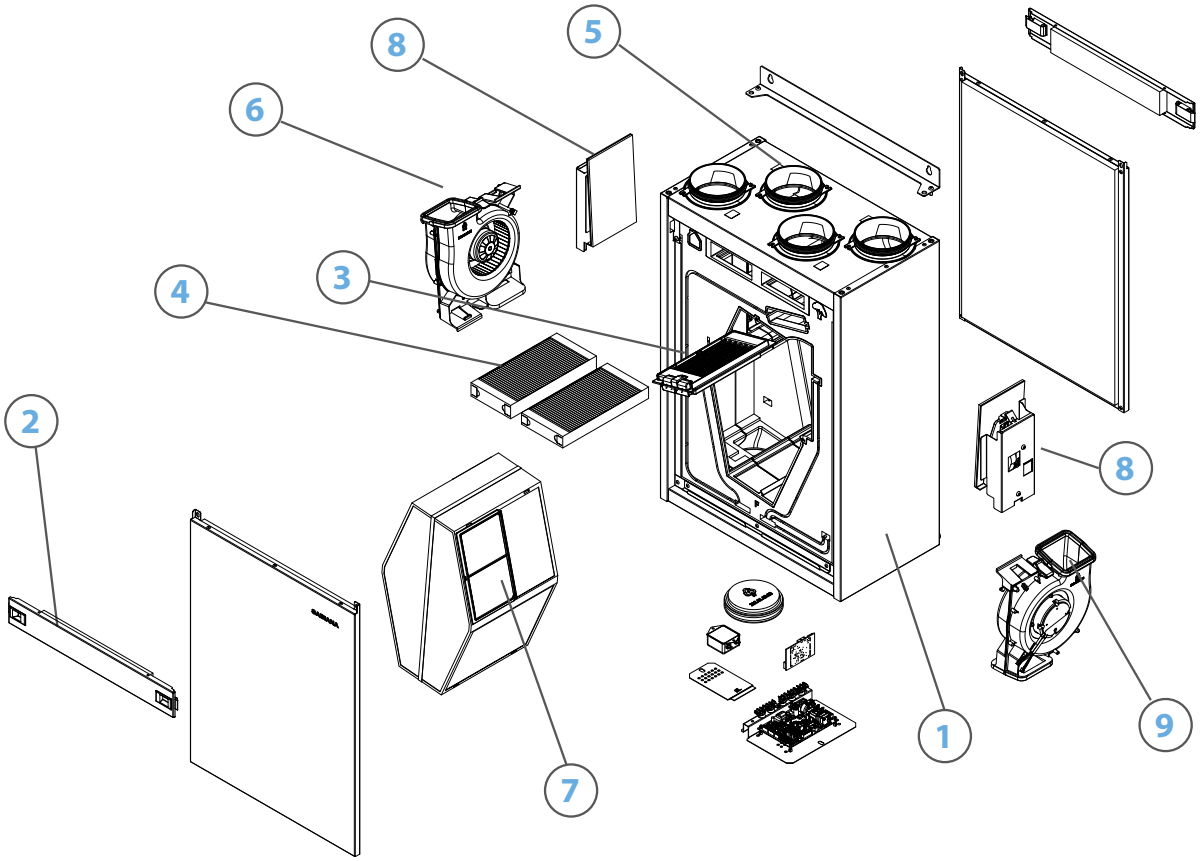
8 By-pass damper

made entirely of ABS and motorised with a Valemo actuator.

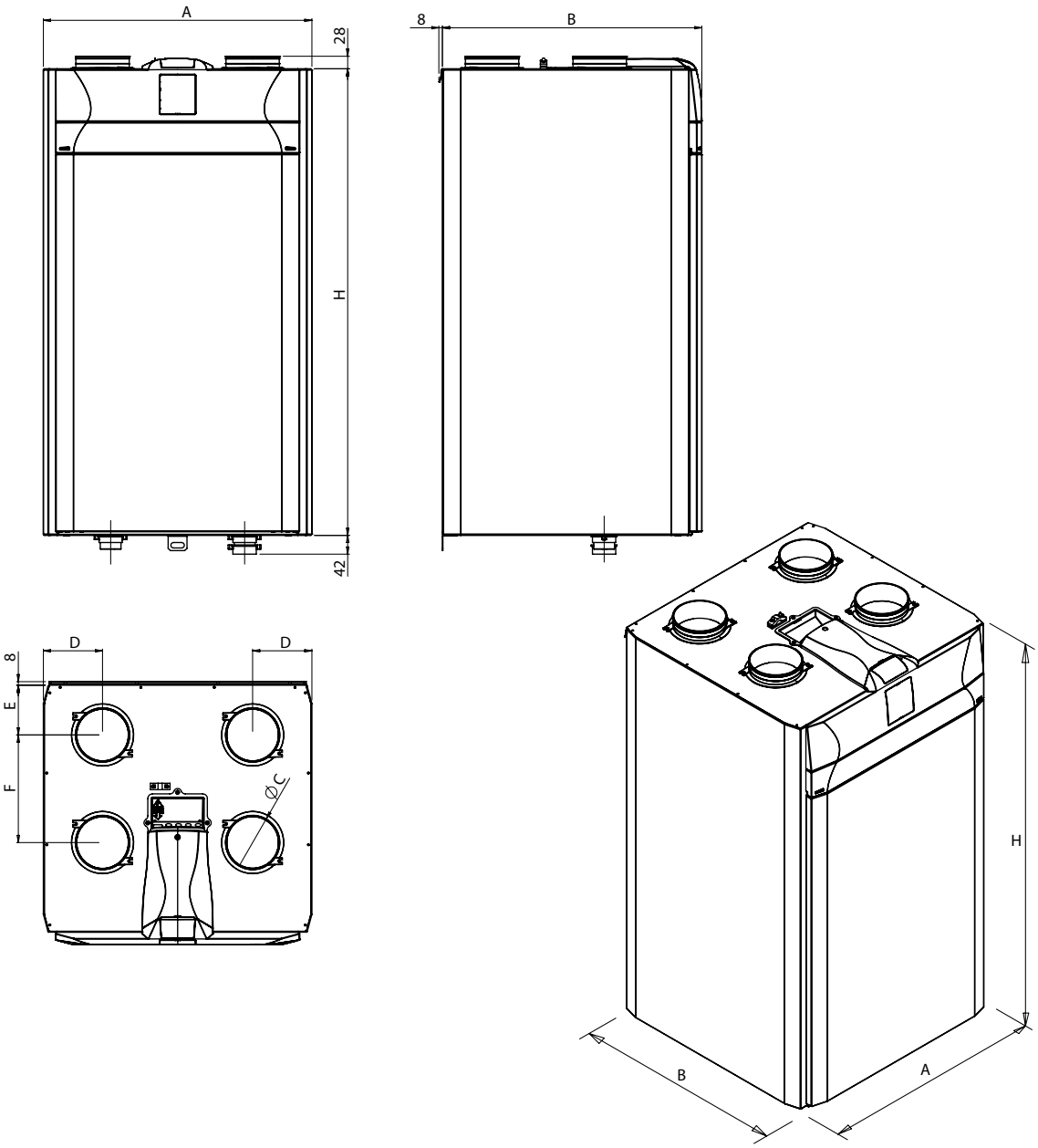
T-EP control (included)

ENY-SP-225 Pro version

Vertical version

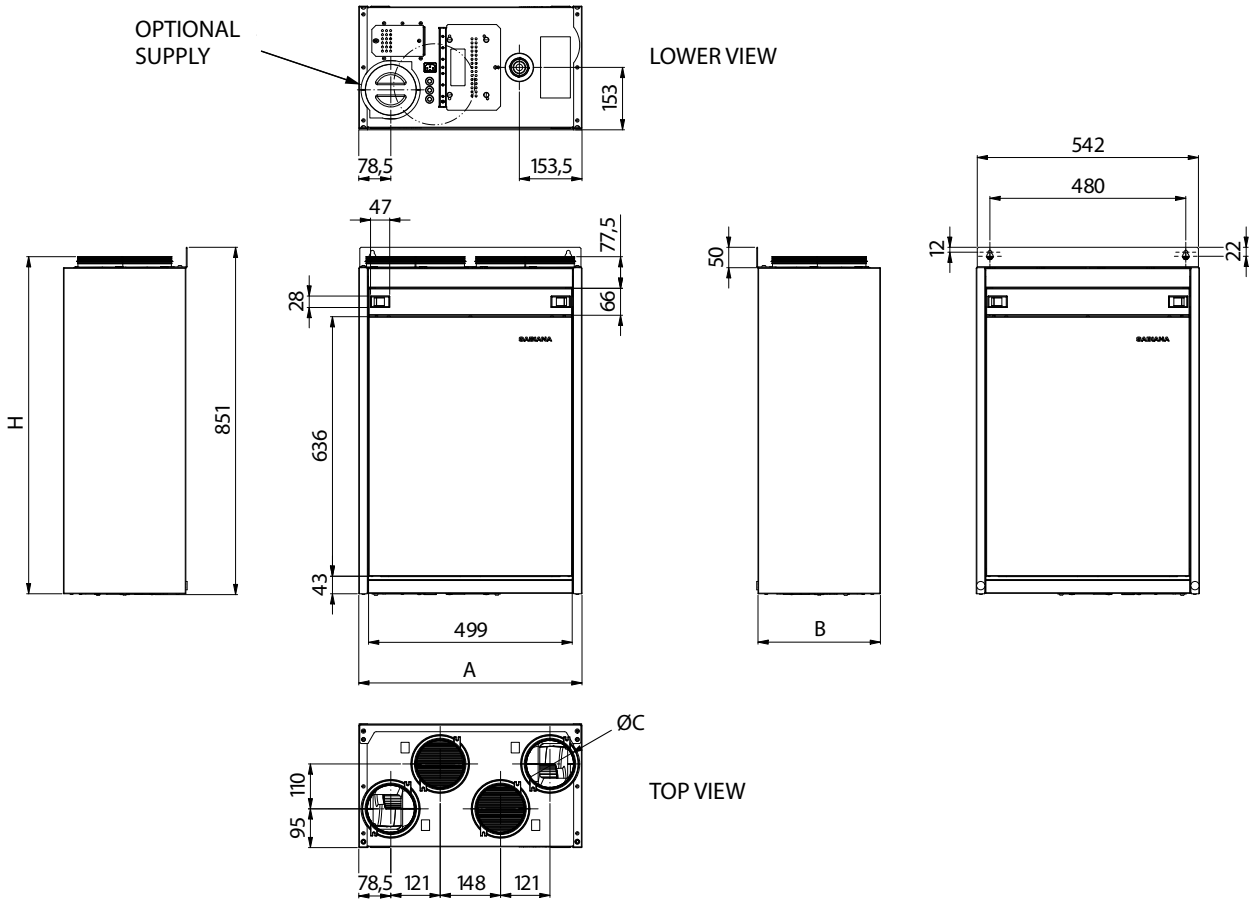


Pro ENY-SP version (ENY-SP-225 excluded) and Standard ENY-S version



Model	Dimensions (mm)							Weight (kg)	
	A	B	ØC	H	D	E	F	With packaging	Without packaging
ENY-SP-180	600	580	125	1041	132	111	240	63	47
ENY-SP-280	600	630	160	1041	132	111	290	67	51
ENY-SP-370	660	680	160	980	147	126	305	75	56
ENY-SP-460	660	680	180	980	147	126	305	75	59
ENY-SP-600	660	680	180	980	147	126	305	75	60
ENY-S-170	547	505	125	1041	106	93,5	212,5	56	40
ENY-S-270	547	580	160	1041	106	111	240	64	48
ENY-S-360	547	630	160	1041	106	111	290	66	50
ENY-S-460	660	680	180	980	147	126	305	75	59
ENY-S-600	660	680	180	980	147	126	305	75	60

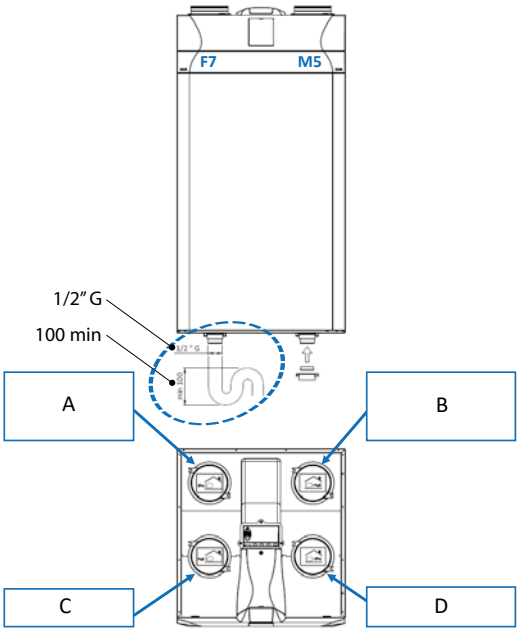
Pro ENY-SP-225 version



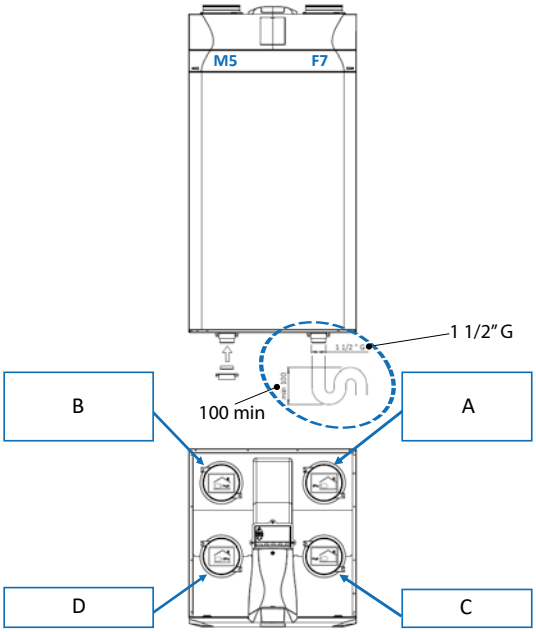
Dimensions (mm)				Weight (kg)	
A	B	ØC	H	Weight packed unit	Weight unpacked unit
547	300	125	826	33	29

Pro ENY-SP version (ENY-SP-225 excluded) and Standard ENY-S version

Left side configuration default



Right side configuration (optional)



A = Extractt air
B = Supply air
C = Fresh air
D = Extract air

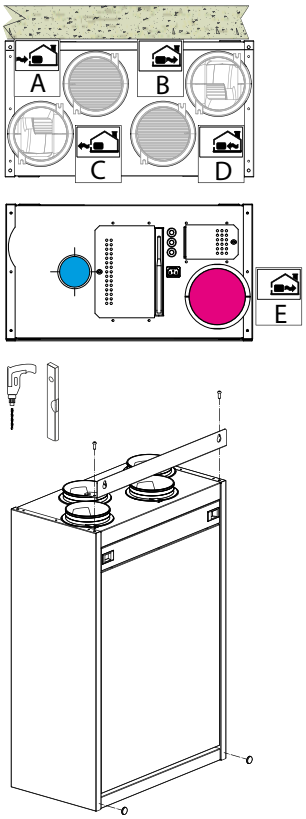
Installation

Wall installation

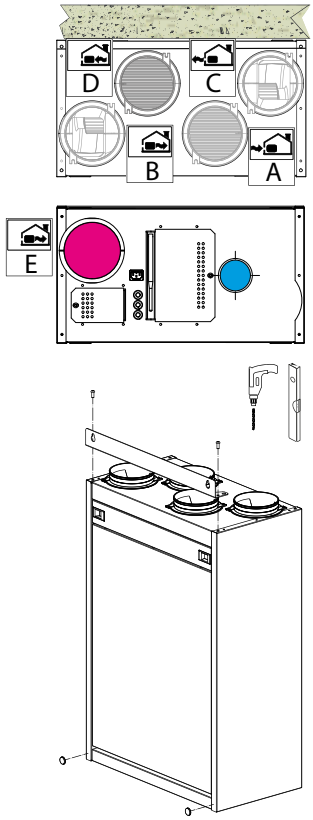
Floor installation

ENY-SP-225 Pro version

Left side configuration

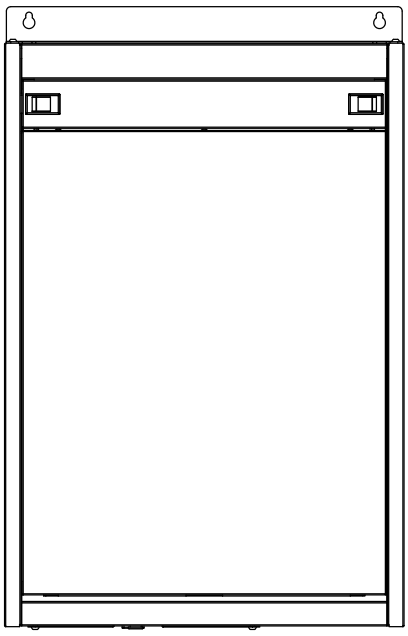


Right side configuration

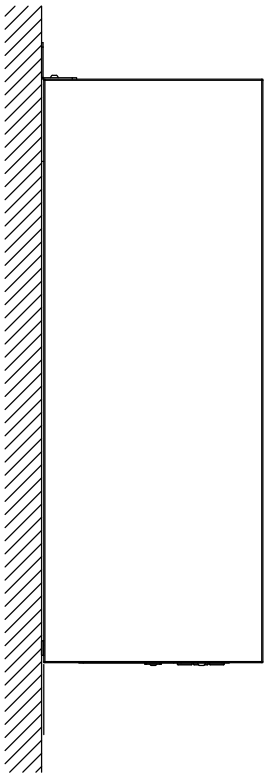


A = Fresh air **B** = Supply air **C** = Exhaust air **D** = Extract air **E** = Optional supply

Installation



Wall installation



Pro ENY-SHP-150 version

1 ENY-SHP-150 version external structure
made of hot-dip galvanised steel sheet panels.

2 Internal structure
made of high density Polystyrene.

3 Frontal panel
galvanized, insulated and painted in RAL 9003.

4 Main power board
Main power board with built-in display, easy to use for calibration and activation of the unit.

5 High efficiency filters compliant with standard ISO 16890
High efficiency micro-pleated filters, frontal extraction have the following features:
- ePM_1 55% - F7 class for the supply air;
- ePM_{10} 50% - M5 class for the extract air.

6 ABS shanks for inlet/outlet flow connection

7 Caps made of ABS for the interchangeability of the position of the air distribution inlet/outlet connections

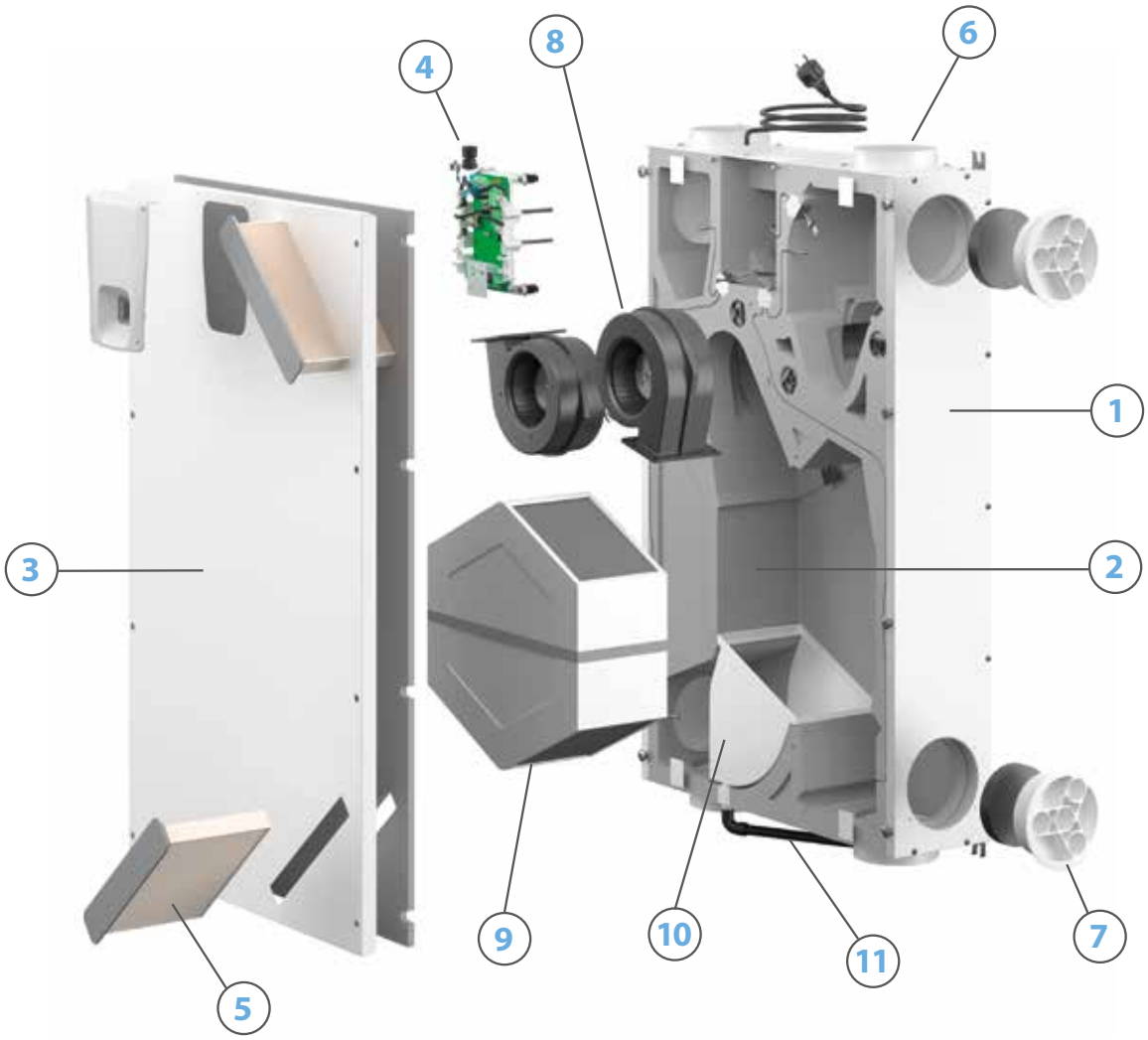
8 Extract air and air supply electric fan
high efficiency centrifugal fan with EC brushless motor and forward curved blades, steady control of air flow rate.

9 Static recovery unit
Counterflow heat recovery unit with low pressure drops. It prevents any winter heat drops due to the introduction of fresh air, thereby recovering up to 88% of the extract heat.
The static heat recovery units do not feature moving parts and guarantee high reliability and safe operation.

10 Condensate collection tray
The condensate collection tray made of ABS is designed for the correct condensate drain in every type of installations, ceiling or wall ones.

11 Condensate drain pipe
The units are equipped with a flexible corrugated pipe 800 mm long, pre-assembled with 90° bend fastening.
In case of water leakage, the drops are conveyed into the collection tray and directed towards the drain pipe.

Pro ENY-SHP-150 version



Pro ENY-SHP-170 version

1 Pro ENY-SHP-170 version external structure
made of hot-dip galvanised steel sheet panels painted in RAL 9003 and satin finish obtained with epoxy paint dried in oven at 180 °C.

2 EPDM fan access closure

3 Polyethylene EPE filter access closure

4 Electric defrosting pre-heater
Electric heater hot filament with reinforced metal lining, controlled by PWM signal (only versions with integrated electric heater).

5 High efficiency filters compliant with standard ISO 16890
The filters have the following features:
- ePM_1 55% - F7 class for the supply air;
- ePM_{10} 50% - M5 class for the extract air.

6 ABS shanks for inlet/outlet flow connection

7/11 Extract air (7) and air supply (11) electric fan
consisting of:
- Permanent single-phase **synchronous EC motor** with protection against overtemperature of the motor and electronic components.
- **High efficiency PA fans** with backward-curved blades
- **Motor/fan housing**.

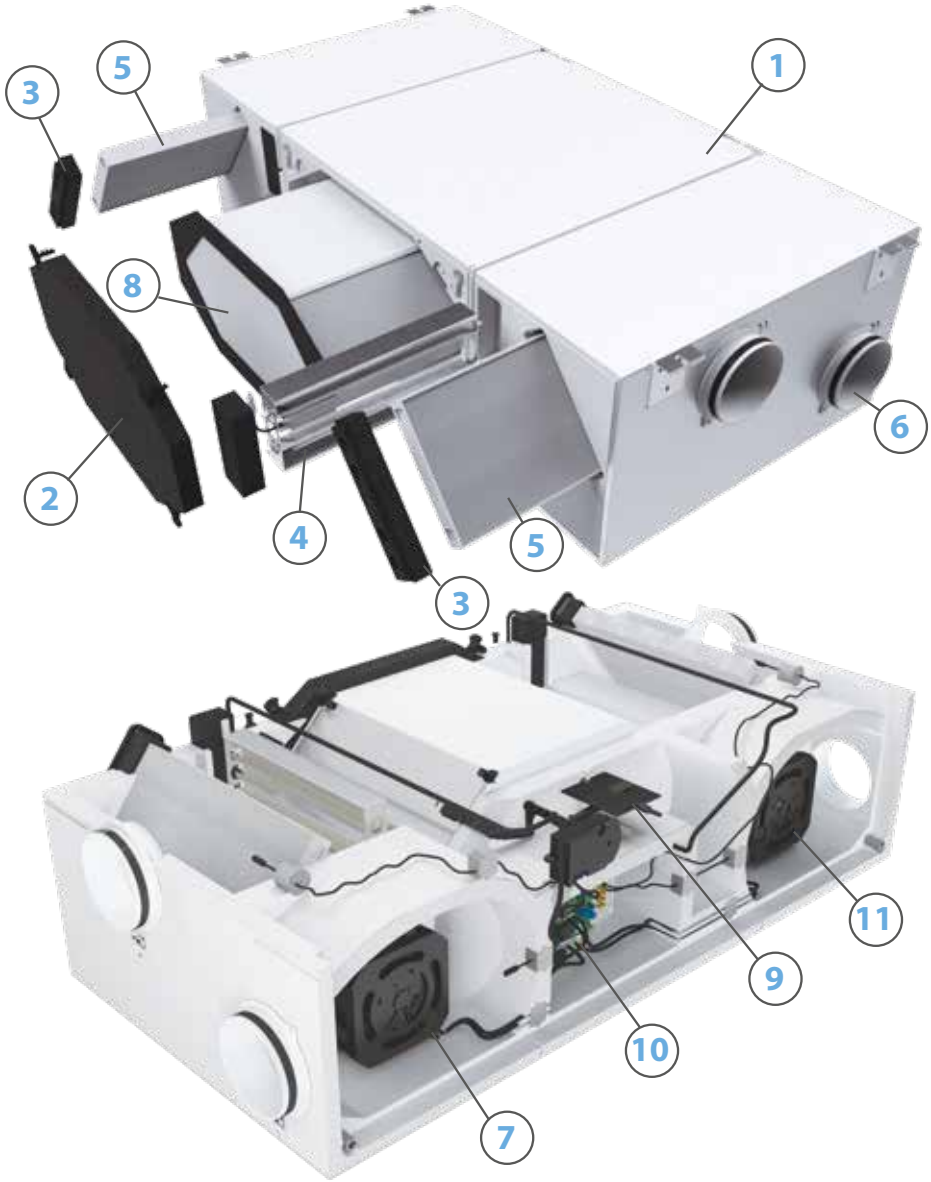
8 High efficiency static heat recovery unit
with PET counterflow exchange plates. The reachable efficiency obtainable may be higher than 90% because they ensure counterflow heat transfer between two air flows at different inlet temperatures. The static heat recovery units do not feature moving parts and guarantee high reliability and safe operation.
In order to increase the efficiency of the heat exchanger, the plate surfaces feature special swirlers.

9 By-pass damper with 2 louvers driven by the same motor

10 Main power board

Pro ENY-SHP-170 version

Horizontal and vertical version



Pro ENY-SHP-270 version

1 Pro ENY-SHP-270 version external structure
made of hot-dip galvanised steel sheet panels

2 Internal structure
made of high density Polystyrene

3 Frontal panel
galvanized, insulated and painted in RAL 9003

4 Electric defrosting pre-heater
Electric heater hot filament with reinforced metal lining, controlled by PWM signal (only versions with integrated electric heater)

5 High efficiency filters compliant with standard ISO 16890
The filters have the following features:
- ePM_1 55% - F7 class for the supply air;
- ePM_{10} 50% - M5 class for the extract air

6 ABS shanks for inlet/outlet flow connection

7 Extract air and air supply electric fan
high efficiency centrifugal fan with EC brushless motor and forward curved blades, steady control of air flow rate

8 Static recovery unit
Counterflow heat recovery unit with low pressure drops. It prevents any winter heat drops due to the introduction of fresh air, thereby recovering up to 88% of the extract heat.
The static heat recovery units do not feature moving parts and guarantee high reliability and safe operation

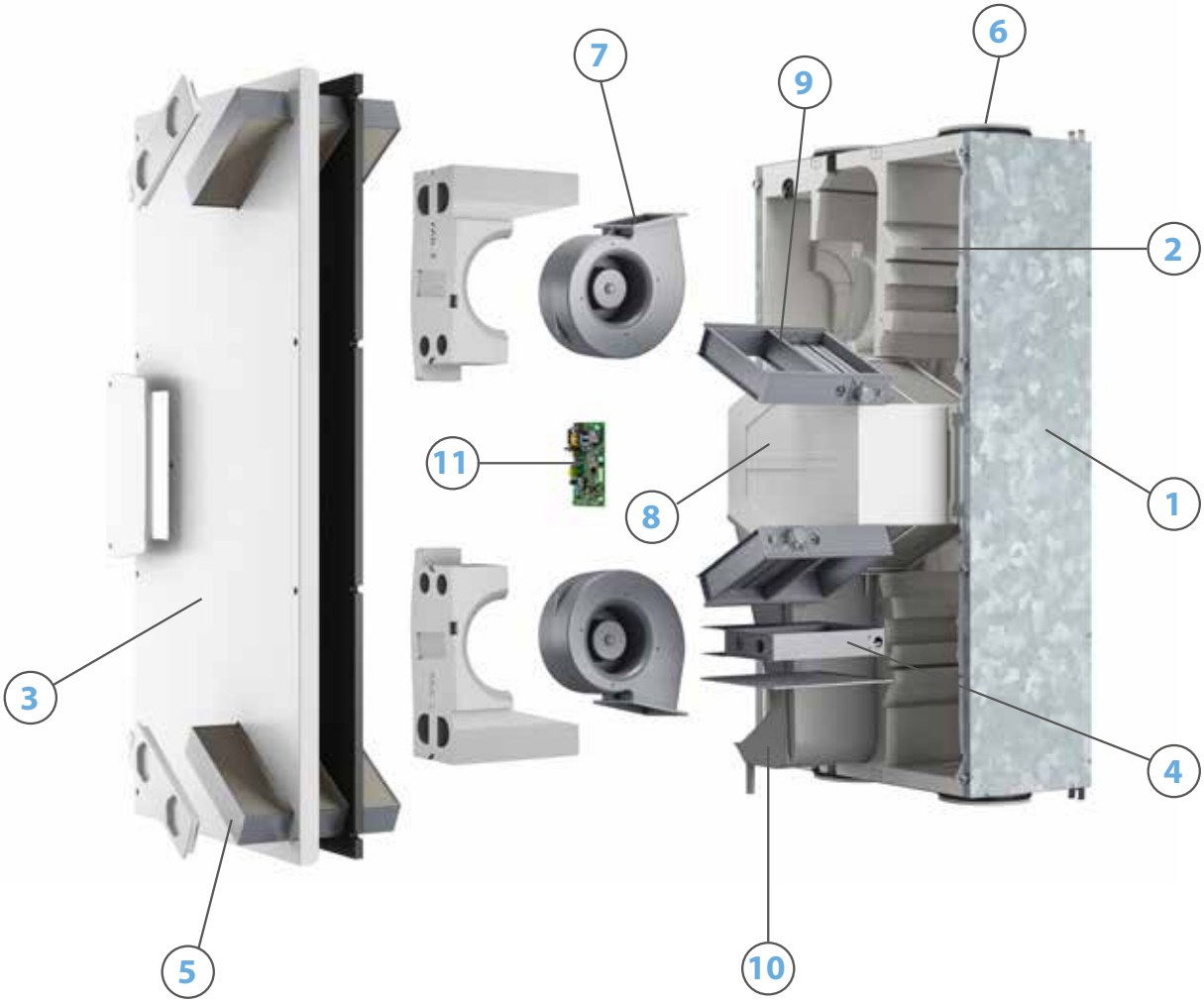
9 By-pass damper with 2 fins activated by stepper motor

10 Condensate collection tray
The condensate collection tray made of ABS is designed for the correct condensate drain in every type of installations, ceiling or wall ones

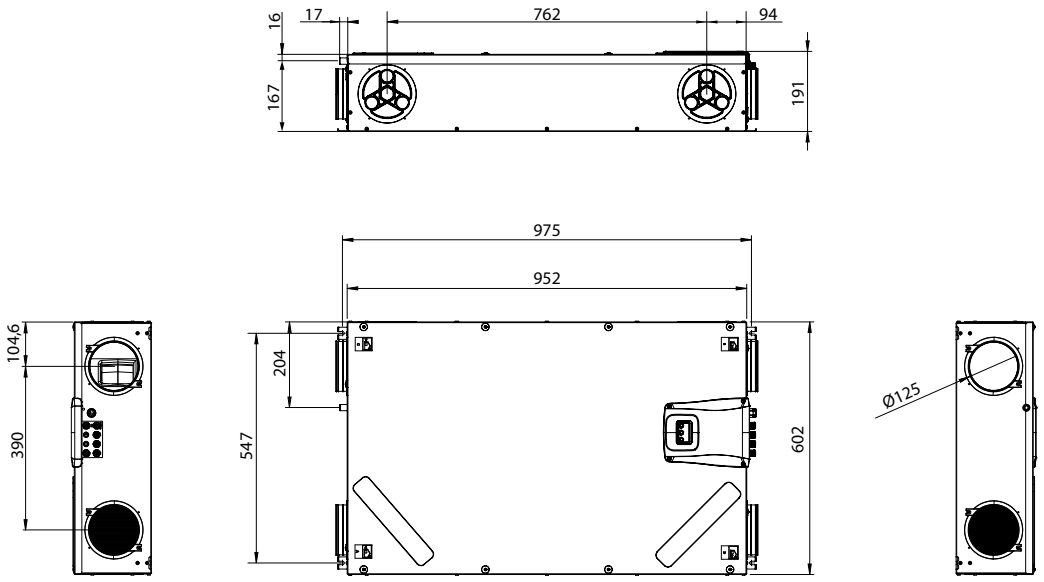
11 Main power board

Pro ENY-SHP-270 version

Horizontal and vertical version



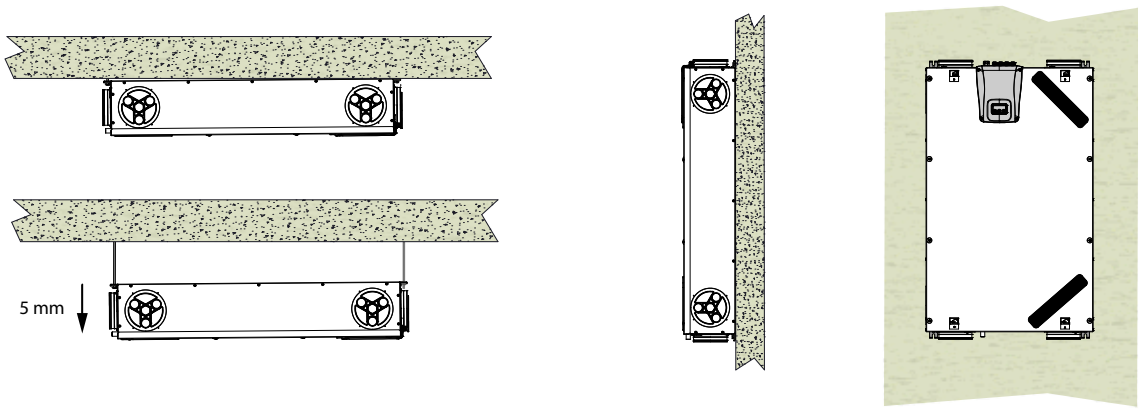
Pro ENY-SHP-150 version



	Weight with packaging	Weight without packaging
ENY-SHP-150	25 kg	23 kg

Installation

The ENY-SHP-150 unit can easily be installed both horizontally and vertically.
Special support brackets pre-fitted on the unit are provided to install the unit horizontally on the ceiling and to install the unit vertically (especially in gaps between plasterboard walls and load-bearing walls).

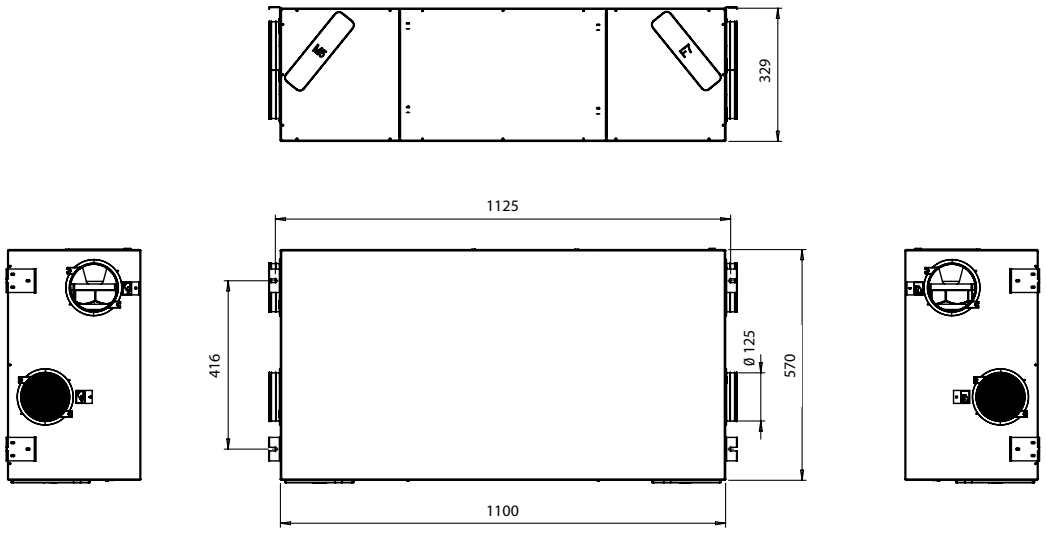


Horizontal installation
Spacer bars can be used to adjust the distance from the ceiling. It is recommended to install the unit tilted towards the side where the ePM1 55% - F7 filter is placed, in order to facilitate condensate drainage.
Provide a slope of min. 5 mm towards the condensate drain.

Vertical installation
Place the unit with the touch screen control upwards, so that the condensate drain connection remains downwards.

The instruction manual indicates the appropriate maintenance clearance for each type of installation.

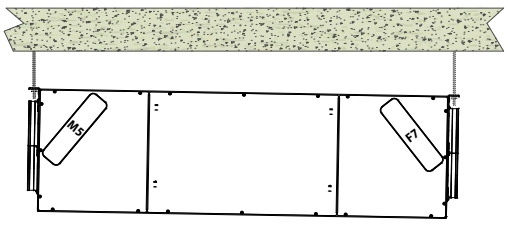
Pro ENY-SHP-170 version



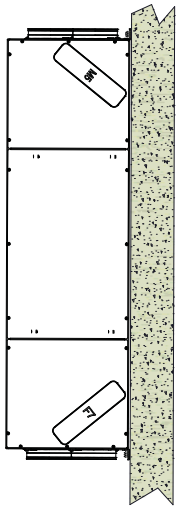
	Weight with packaging	Weight without packaging
ENY-SHP-170	35 kg	31 kg

Installation

The ENY-SHP-170 unit can easily be installed both horizontally and vertically.
Special support brackets are provided to install the unit horizontally on the ceiling and to install the unit vertically (especially in gaps between plasterboard walls and load-bearing walls).



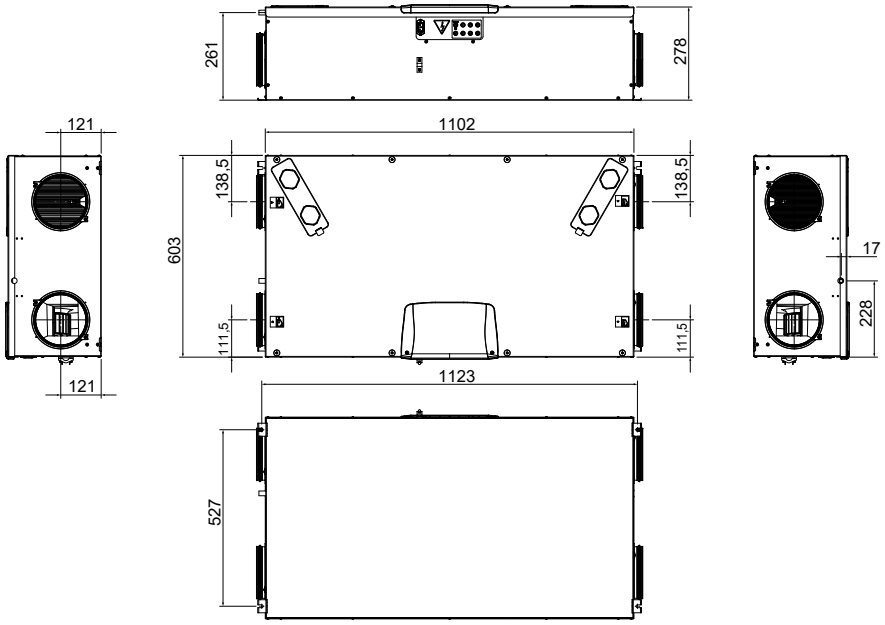
Horizontal installation
Spacer bars can be used to adjust the distance from the ceiling. It is recommended to install the unit tilted towards the side where the ePM_1 55% - F7 filter and the condensate drain pipe are placed, in order to facilitate condensate drainage (provide a slope of 2% towards the filter and of 1% towards the condensate drain pipe).



Vertical installation
Place the side ePM_1 55% - F7 downwards the unit..

The instruction manual indicates the appropriate maintenance clearance for each type of installation.

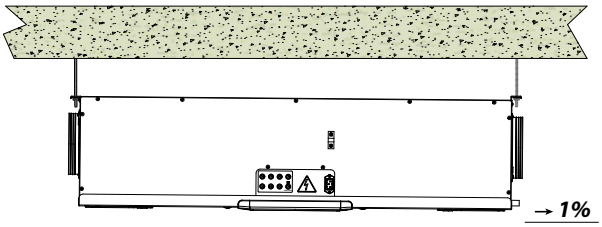
Pro ENY-SHP-270 version

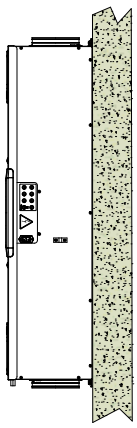


	Weight with packaging	Weight without packaging
ENY-SHP-270	38 kg	31 kg

Installation

The ENY-SHP-270 unit can easily be installed both horizontally and vertically.
Special support brackets are provided to install the unit horizontally on the ceiling and to install the unit vertically (especially in gaps between plasterboard walls and load-bearing walls).





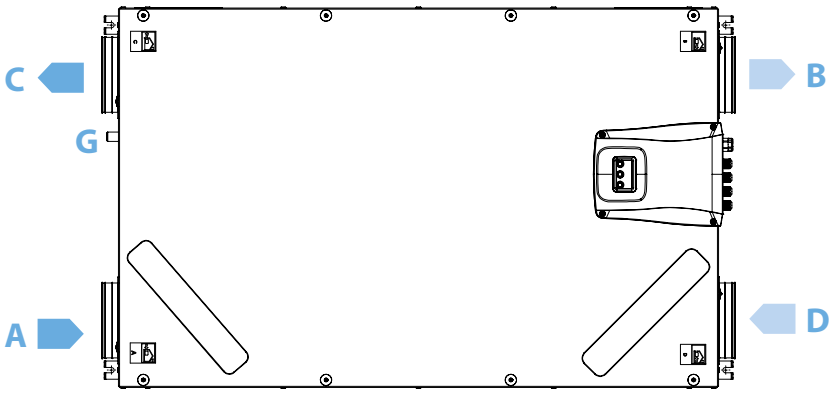
Horizontal installation
Spacer bars can be used to adjust the distance from the ceiling. It is recommended to install the unit tilted towards the side where the ePM1 55% - F7 filter and the condensate drain pipe are placed, in order to facilitate condensate drainage (provide a slope of 2% towards the filter and of 1% towards the condensate drain pipe).

Vertical installation
Place the side ePM1 55% - F7 downwards the unit.

The instruction manual indicates the appropriate maintenance clearance for each type of installation.

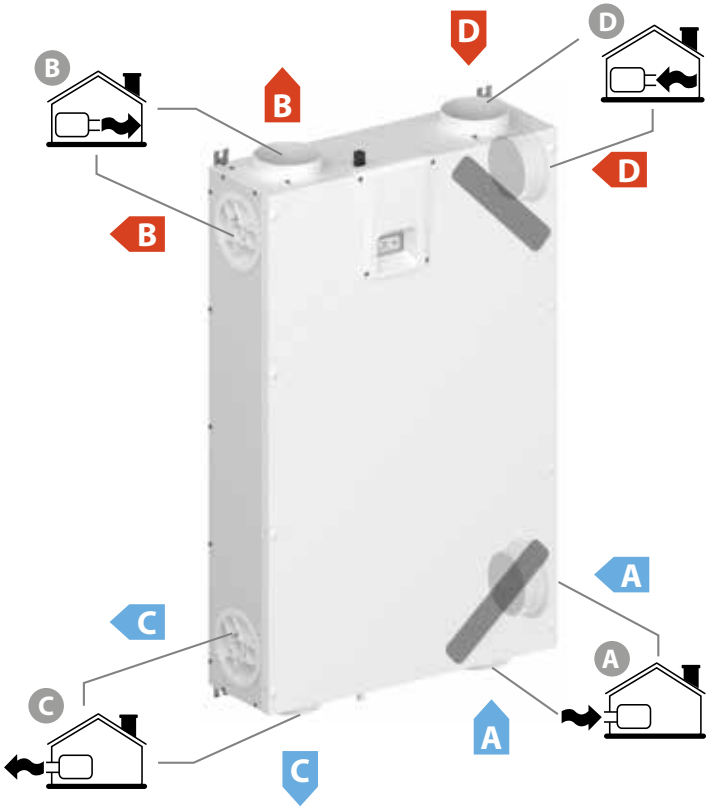
Pro ENY-SHP-150 version

The standard configuration of the unit provides that the air distribution connections are fitted on the short sides of the unit, with the extract air fan fitted on the short side nearest to the control panel..



View from above

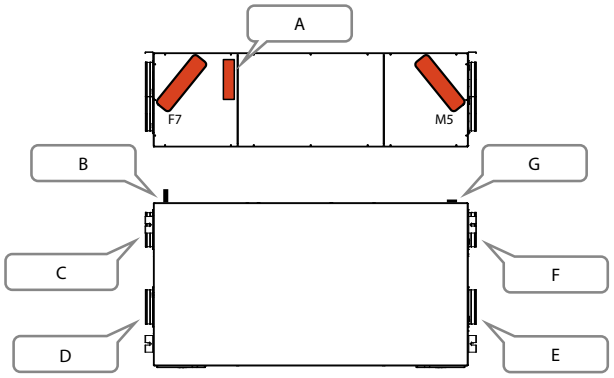
If necessary, it is possible to turn of 90° the position of one or more air connections to drive them on the long side near the unit.



A = Fresh air
B = Suplly air
C = Exhaust air
D = Extract air
G = Condensate air

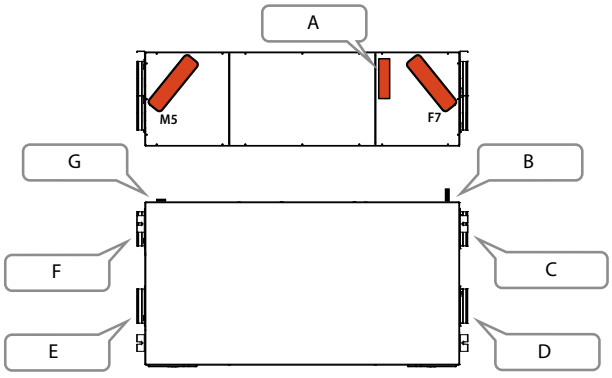
Pro ENY-SHP-170 version

Optional left side configuration (view from above)



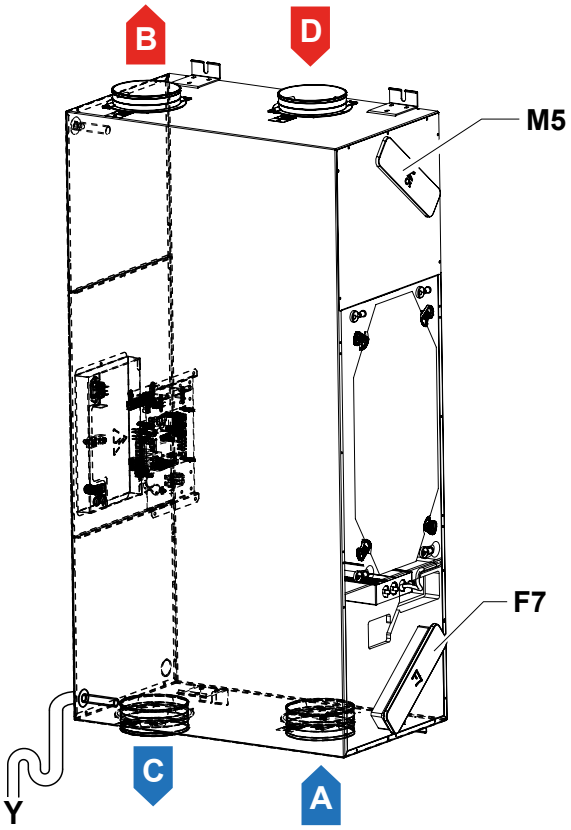
A = Electric pre-heater
B = Condensate drainage
C = Exhaust air
D = Fresh air

Defaul right side configuration (view from above)



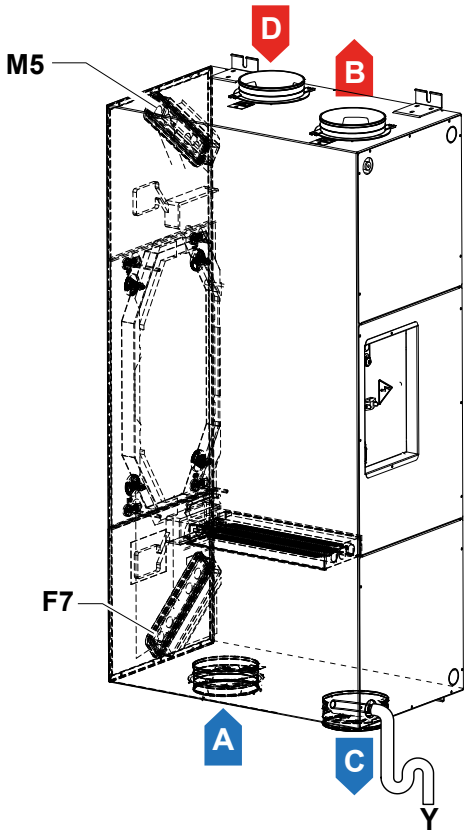
E = Extract air
F = Supply air
G = Cap

Standard initial configuration



A = Fresh air
B = Supply air

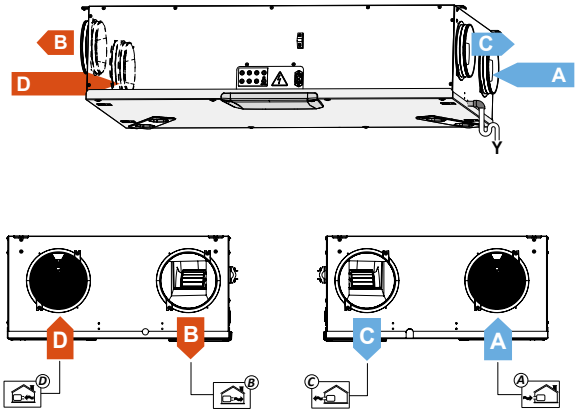
Final inverted configuration



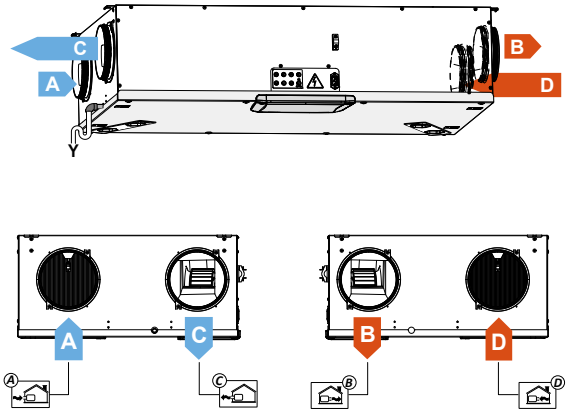
C = Exhaust air
D = Extract air

Pro ENY-SHP-270 version

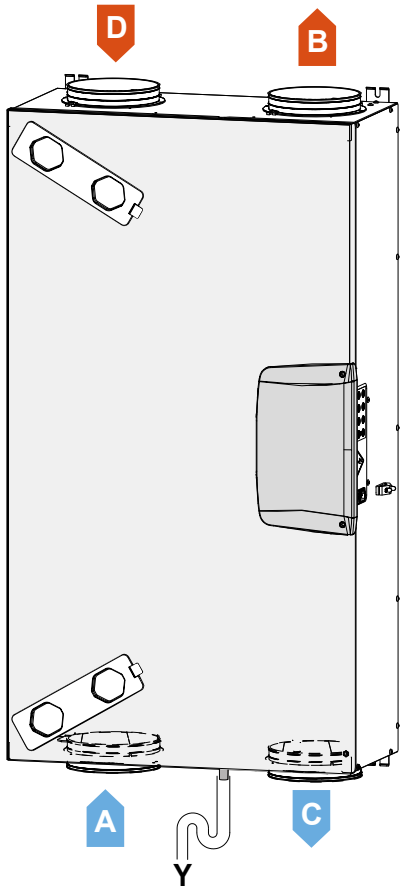
Left horizontal side installation



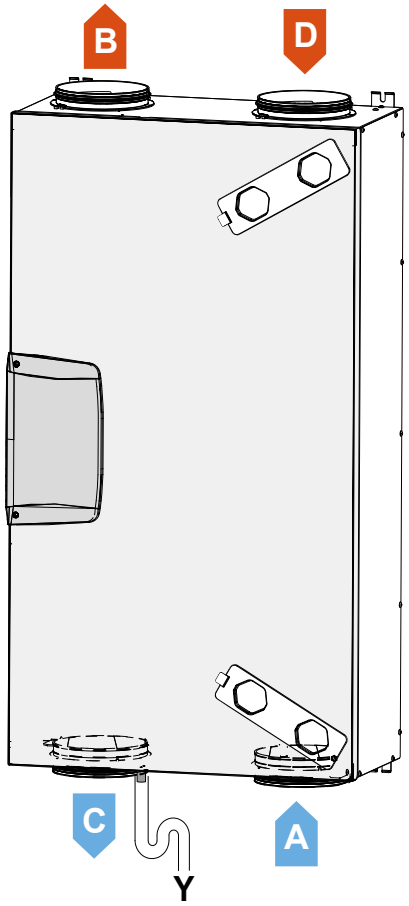
Right horizontal side installation



Left vertical side installation



Right vertical side installation



A = Fresh air **B** = Supply air **C** = Exhaust air **D** = Extract air

T-EP control panel

The Energy Smart vertical units and the ENY-SHP-170 and ENY-SHP-270 sizes are equipped as standard with a T-EP control panel. For the size ENY-SHP-150 such an interface is an accessory instead.
The use of the interface is very intuitive and thanks to the icons on the screen, the two keys and the touchpad, it is possible to display and change the operating status of the unit, display the values read by the temperature sensors and humidity sensor (if any), and display any alarm.

The use of the interface is simplified by the presence of two sub-menus:

- **User Settings Menu** where the user can select the operating mode and set the clock.
- **Technical Settings Menu** where the installer can calibrate the flow rates, change the unit operating parameters
- and monitor the operating status..

The **user settings menu** is used to select the following unit operating modes:

- **Manual Mode**

Customised selection of desired air flow rate in manual mode:

- 100% - Nominal ventilation (standard)
- 70% - Reduced ventilation (night-time)
- 45% - humidity control for high humidity rate environments
- 25% - humidity control for low humidity rate environments.

- **Party Mode**

Timed function, active for 3 hours after activation, in which the nominal speed is increased by 30%.

- **Holiday Mode**

Anti-mould function with the fans at minimum speed.

- **Automatic Mode**

Speed controlled by means of an automatic control cycle relating to ambient instantaneous humidity and CO_2 variations. This mode is only available for the Pro version or for units equipped with an air quality sensor (humidity or CO_2).

The user menu is also used to set the clock and perform weekly programming.

For the **Technical Settings Menu**, see the "Energy Smart" technical guide.

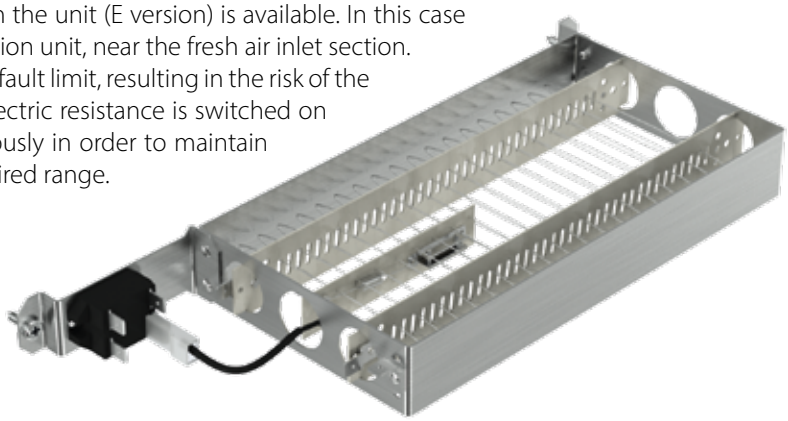
ENY-SHP-150 control panel

The Energy Smart ENY-SHP-150 unit is equipped with a built-in display of the control fitted on the unit.
The control is easy to use and lets the reset of filter change timer and having access to the technical menu of the following functions:

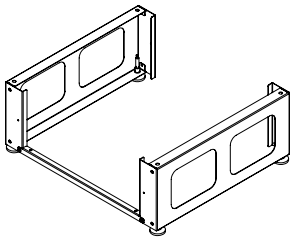
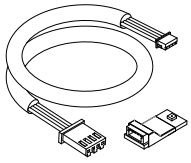
- To do the automatic fan calibration during the installation.
- To set the filter change time during the installation.
- To set the automatic operating mode with the use of the built-in humidity probe.
- To activate the external modulating electric heater or relay for the ON/OFF valves with the antifreeze pre-heating function.
- To set the dry contact terminals and the digital signal during the installation.
- To visualize the operating parameters.
- To visualize the alarm and filter change notifications.

To activate further ventilation modes with the use of the T-EP Accessory.

When installing in regions with particularly harsh climatic conditions, the units must be equipped with a preheating coil to prevent freezing phenomena on the discharge air outlet side. The electric heater can be installed on the fresh air intake section, see the next dedicated paragraph, or, only for the units from size 170 to size 600, the version with electric heater fitted on the unit (E version) is available. In this case the electric heater is fitted within the ventilation unit, near the fresh air inlet section. The fresh air temperature drops below the default limit, resulting in the risk of the counterflow heat exchanger freezing, the electric resistance is switched on and the thermal power is adjusted continuously in order to maintain the discharge air temperature within the desired range.



Accessories

ES-E	**External pre-heating circular electric heater**	
ES-P	**Feet**	
ES-DP	**Pressure sensor**	
ES-SU	**Capacity humidity sensor**	
KNX-RVU	**KNX interface kit**	

Sabiana S.p.A. offers a wide range of accessories **designed for air distribution** in controlled mechanical heat recovery ventilation systems, used to ventilate small residential and commercial buildings, to install an air distribution network in the various environments and meet any need.

The system consists of several components:
- **Double wall**, circular and semicircular **flexible duct** made of high density polyethylene (PE), smooth on the inside, suitable for false ceiling, wall and underfloor installation. On the internal surface, the ducts have an antibacterial and antistatic layer to ensure constant air cleaning. The flexible ducts are also available without the antibacterial and antistatic layer.
- Moulded **PE accessories**, including 90° horizontal and vertical bends, connectors, bracket elements, grid adapters and inlet and outlet valves complete the range of products.

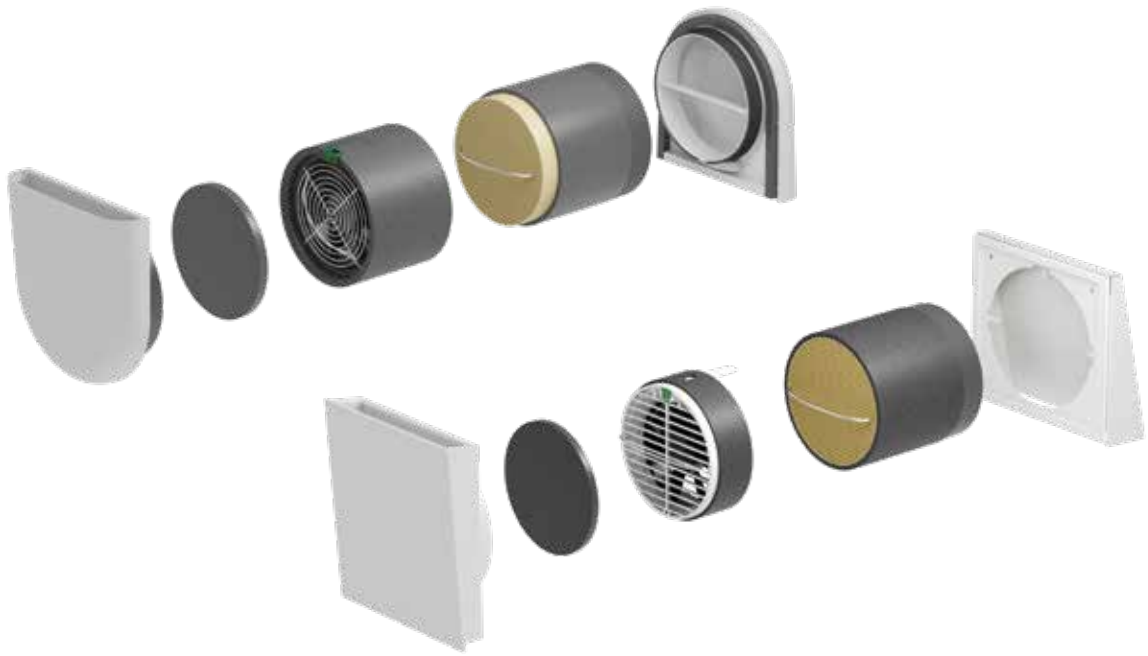
The **Sabiana Energy Smart** unit is connected to the universal distribution boxes through insulated ducts and silencers, while the flexible duct is used to supply fresh air in the premises and to extract the stale and damp air from bathrooms and kitchens. To complete the system, there is a range of accessories, connectors, fasteners, and bends, which ensure sealed connections without using adhesive tape or glue, to fasten the flexible duct to the floor or ceiling, to make 90° horizontal or vertical bends with radius of curvature below that of the duct.

The volume of air going through each duct is determined by the flow rate regulators installed on the outlets of the universal distribution boxes.
On request, Sabiana provides a free configurator for defining the number of rings to be removed from the flow rate regulators.

The Sabiana configurator requires the following information:
1. Air flow rate of each circuit;
2. Type of flexible duct;
3. Length of duct paths;
4. Number and type of bends (horizontal or vertical).

For all the conducts, diffusers and related accessories see the "Energy Smart" technical guide.

Energy Easy
Recovery Unit



Energy Easy is the compact decentralised ventilation system with heat recovery.
The units are suitable for controlled ventilation of residential buildings, providing a valid alternative to conventional centralised ventilation systems and does not require air distribution ducts.

Energy Easy is easy to install and is suitable for installation not only in new buildings but also in the renovation of existing buildings. Energy Easy units should preferably be used in pairs in order to carry out simultaneous ventilation of the housing unit, this way one device operates to supply the air, while the second one extracts it.

The inversion of the operating direction takes place after 50-70 seconds simultaneously in both paired devices, depending on the ventilation flow rate. This ensures ventilation of the room and generates the compensation required in compliance with DIN standard 1946-6 of the air intake and extraction volumes.
Through the integrated heat recovery system, the heat energy is extracted from the outlet air and accumulated.
After reversing the direction of operation, the stored heat is returned to the fresh and filtered inlet air.
This way, **Energy Easy ensures heat recovery up to 91%**.

The Energy Easy range consists of two units: **Energy Easy** and **Energy Easy Pro**.
To each one of these, it is possible to combine 2 different types of controls, creating systems with more or less evolved control based on installation needs: manual control, control with hourly programming, centralized control with humidity sensor or humidity/temperature sensor or zone control with humidity/temperature sensor.

TECHNICAL FEATURES

Energy Easy units have a **modular structure** consisting of an internal (1) and an external (2) nozzle with optimised design to assure optimal air flow with **low noise impact**; an internal G3 dust filter (3) and an external insect filter (4), the ventilation unit (5) with axial fan with **high ventilation efficiency**, equal and constant in the two directions, with **low electrical absorption**, a heat recovery unit (6) made of ceramic material with beehive structure that assures minimum pressure drops when air flows through and heat recovery up to 90% (91% Energy Easy Pro).

Assembly must take place on an external perimeter wall with one of the installation kits available. The assembly pipe, in which the ventilation unit and heat recovery unit are fitted, is firmly glued to the wall. The components can be mounted without tools. Thanks to its modular structure, **very few maintenance and assistance** activities are required. Energy Easy therefore makes it possible to save not only on valuable energy resources, but also overall system costs.

Energy Easy

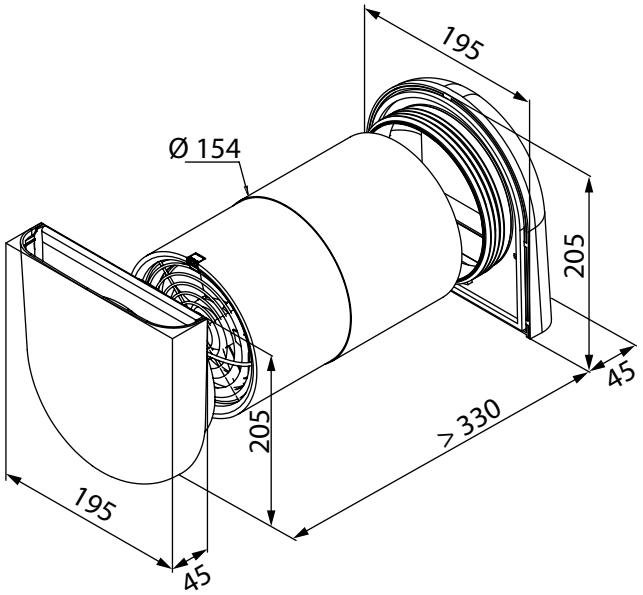
Speed		1	2	3	4
Maximum heat recovery efficiency	[%]	90			
Eco/ ventilation mode volume flow((1)	[m^3/h]	16	22	30	43
Sound pressure level(2)	[dBa]	14,3	21,4	31,8	36,7
Power input(3)	[W]	0,9	1,4	2,4	2,8
SPI	[W/m^3/h]	0,12			
Protection rating	-	IP22			
Operating temperatures range	[°C]	-20 ... 60			
Normalised acoustic insulation Dn, w	[dB]	39/43 (with optional insulating kit)			
Diameter of hole on the wall	[mm]	162			
Minimum thickness of wall	[mm]	315			
Weight	[g]	4400			

Energy Easy Pro

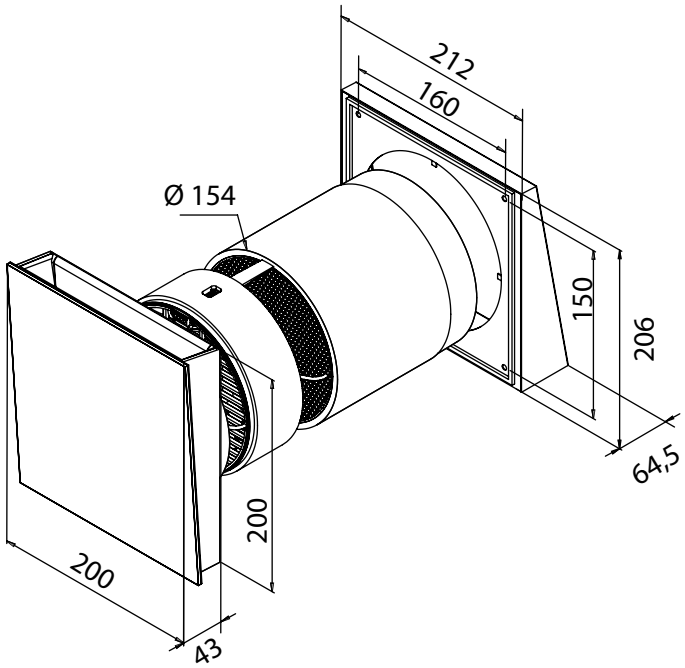
Speed		1	2	3	4
Maximum heat recovery efficiency	[%]	91			
Eco/ ventilation mode volume flow((1)	[m^3/h]	18	28	38	46
Sound pressure level(2)	[dBa]	11	21	30	33
Power input(3)	[W]	0,7	1,2	2,4	3,3
SPI	[W/m^3/h]	0,12			
Protection rating	-	IP42			
Operating temperatures range	[°C]	-20 ... 60			
Normalised acoustic insulation Dn, w	[dB]	39/43 (with optional insulating kit)			
Diameter of hole on the wall	[mm]	162			
Minimum thickness of wall	[mm]	255			
Weight	[g]	4600			

(1) to be used in pairs
(2) rated up to a distance of 2 m within a range free from operating temperatures, air supply mode
(3) without power supply

Energy Easy



Energy Easy Pro



Energy Easy

Energy Easy units can be controlled either by the **knob control** or by the **PUSH control**.
Both controls with the included 12V power supply unit must be installed in a wall recess using the recess box available as accessory. The 12V power supply unit for electrical panel is available as optional feature.
The Energy Easy controls make it possible to connect up to 4 units with star connection.

Technical data sheet of the product according to (EU) regulation no. 1254/2014

			 ENY EASY Knob control	 ENY EASY PUSH control
Specific energy consumption (SEC) Cold climate zone		[kWh/(m²a)]	-79,91	-82,56
Specific energy consumption (SEC) / Energy class Temperate climate zone		[kWh/(m²a)]	-38,91 / A	-40,69 / A
Specific energy consumption (SEC) Hot climate zone		[kWh/(m²a)]	-15,42	-16,70
Type		-	Residential ventilation unit (RVU) / Bidirectional ventilation unit (BVU)	
Heat recovery system		-	Regenerative	
Heat recovery efficiency		[%]	82,5	
Maximum air flow rate		[m³/h]	43,7	
Reference air flow rate		[m³/h]	30	
Sound power level		[dBa]	43,7	
Power input of two fans (without power supply unit)		[W]	5,6	
SPI (without power supply unit)		[Wh/m³]	0,115	
Static head of reference		[Pa]	0	
CTRL (control factor)		-	1	0,85
Type of control		-	Manual	Centralised
Filter replacement indicator position		-	Light indicator on control	
Annual power consumption (AEC) per m²		[kWh/a]	1,58	1,24
Annual heating energy saving (AHS) per m² (referred to a surface of 100 m²)	Cold climate zone	[kWh/a]	83,87	85,67
	Temperate climate zone	[kWh/a]	42,87	43,79
	Hot climate zone	[kWh/a]	19,39	19,8

Energy Easy Pro

Energy Easy Pro units can be controlled either by the LED control or by the TOUCH control. Both controls require the 42V power supply unit supplied as accessory in the wall or electrical panel version. The controls must be installed in a wall recess using the recess box available as accessory.
Up to 6 units may be connected to each control with star or series connection. The system is controlled by a BUS system and the control may be located in any position within the cable network (maximum length 1000 m).

Technical data sheet of the product according to (EU) regulation no. 1254/2014

			 ENY EASY Pro Control LED	ENY EASY Pro Control TOUCH	 ENY EASY Pro Control TOUCH with one sensor	ENY EASY Pro Control TOUCH with several units and at least one sensor
Specific energy consumption (SEC) Cold climate zone		[kWh/(m²a)]	-79,19	-80,81	-82,59	-86,03
Specific energy consumption (SEC) / Energy class Temperate climate zone		[kWh/(m²a)]	-38,74 /A	-39,36 / A	-40,57 / A	-42,88 / A+
Specific energy consumption (SEC) Hot climate zone		[kWh/(m²a)]	- 15,16	-15,61	-16,50	-18,15
Type		-	Residential ventilation unit (RVU) / Bidirectional ventilation unit (BVU)			
Heat recovery system		-	Regenerative			
Heat recovery efficiency		[%]	83			
Maximum air flow rate		[m³/h]	46			
Reference air flow rate		[m³/h]	32,2			
Sound power level		[dBa]	42			
Power input of two fans (without power supply unit)		[W]	3,8			
SPI (without power supply unit)		[Wh/m³]	0,125			
Static head of reference		[Pa]	0			
CTRL (control factor)		-	1	0,95	0,85	0,65
Type of control		-	Manual	Synchronised	Centralised	Based on local needs
Filter replacement indicator position		-	Light indicator on control			
Annual power consumption (AEC) per m²		[kWh/a]	1,72	1,59	1,35	0,9
Annual heating energy saving (AHS) per m² (referred to a surface of 100 m²)	Cold climate zone	[kWh/a]	84,21	84,8	85,96	88,29
	Temperate climate zone	[kWh/a]	43,05	43,35	43,94	45,13
	Hot climate zone	[kWh/a]	19,47	19,6	19,87	20,41

Energy Easy | INSTALLATION KIT

Energy Easy and Energy Easy Pro Units installation is possible with the use of the following available installation kits.

Installation kit

Installation kit for window

Pre-formed wall installation block

Humidity sensor fitted on the unit
(for Energy Easy Pro with TOUCH control only)

Additional silencer separator

APF
(4 piece set)

Wall recessed box (for thermostat)
(PUSH control excluded - Energy Easy)

Wall recessed box for plasterboard (for thermostat)
(PUSH control excluded - Energy Easy)

Wall recessed box
(for PUSH control)

LiYY 4 x 0,25 mm² - 100 m cable

Ocean ECM

Double insulated panel fan coil modular version

The **Ocean ECM** ceiling double insulated panel fan coils are suitable for heating and cooling small and medium-sized environments.

It is the most comprehensive range, perfectly suited to meet all of the climate control needs of work environments such as offices, shops, restaurants and hotel rooms featuring ducted installations with high available pressure.

5 sizes are available (from 600 to 4.600 m^3/h), each one equipped with synchronous permanent magnet brushless electronic motor and inverter board, 3 - 4 - 6 row coils. It is also possible to mount either an additional section of 1 - 2 row coil for 4 pipe systems. All the units are constructed with single sections that can be easily assembled to satisfy any installation need.

Casing consists of self-supporting insulated panels with internal insulation of 30 kg/m^3 expanded polystyrene 22 mm thick. The panels are made inside of galvanized steel and of pre-painted galvanized steel plate RAL9006 outside.

Fixing blocks. The modular sections can be easily assembled by means of fixing blocks that quickly and precisely hold together the different sections. All the modular sections are equipped with fixing blocks preassembled on the casing.

Fan assembly consists of centrifugal fans with plastic blades directly keyed on the motor with double aspiration.

Motor. It is a synchronous three phase permanent magnet brushless electronic motor controlled with BLAC technology. The inverter board that controls the motor generates a frequency modulated, wave form power supply. The electric power supply required: 230 V.

Coil. It is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process.
The modular units are available with:
- Heating coil section with 2 or 3 rows for 2 pipe system
- Cooling coil section with 3, 4 or 6 rows for 2 pipe system
- Heating and cooling coil section for 4 pipe system with 1 or 2 row coil for heating and 3, 4 or 6 rows for cooling

Threaded coil male connections.

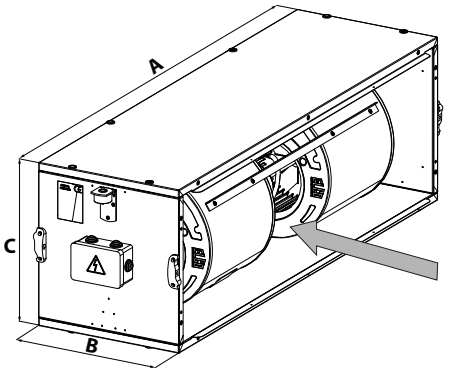
Filter available in the following versions:
- G0
- ePM$_{10}$ 50% (ex G4)
- ePM$_1$ 55% (ex F7)

Condensate collection tray made of steel painted with epoxy polyester coat, dried in a furnace at 180 °C. The diameter of the condensate discharge pipe is 15 mm.

Available modular components
- Fan section
- Single or double coil section
- G0 filter section
- ePM$_{10}$ 50% (ex G4) class filter section
- ePM$_1$ 55% filter class (ex F7)
- Additional coil section for 4 pipe system (to be used with the compact section when the additional coil is required)
- Heating electric coil section
- Disposable pad humidification section
- Steam pad humidification section with fitted steam nozzle and steam generator separately delivered
- Section with damper
- Crystall section

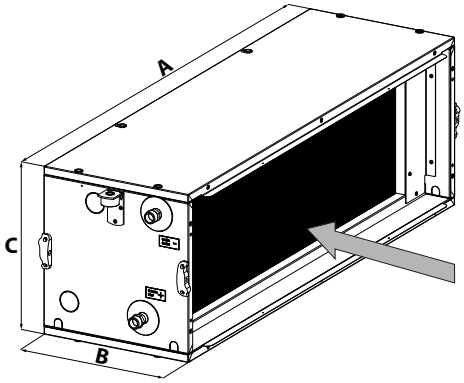
SVE-DP **Fan section**

The fan section is made of an internal structure of double insulated panels and fan deck with brushless fan/motor assembly.
The electrical connection is reported within the electrical box on the section side.

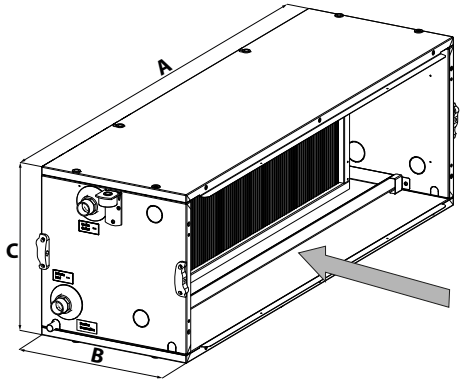


SBC **Heating coil section**

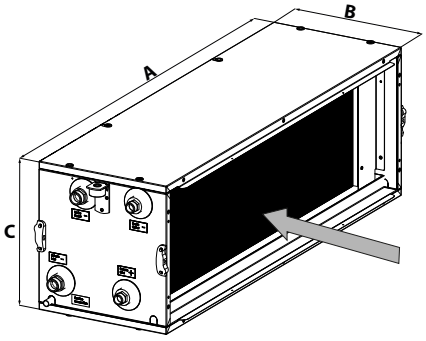
The SBC section is for heating only and is available with 2 or 3 row coil



SBF **Cooling coil section**



SBCF **Heating + cooling coil section**

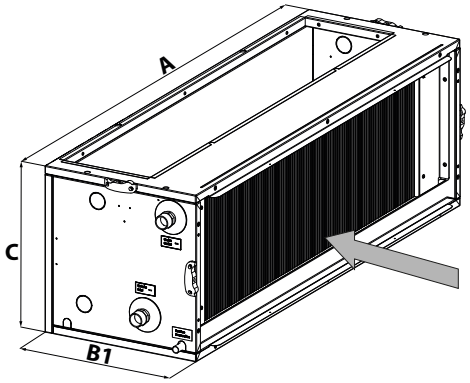


SBVF

Coil section for vertical installation

The SBVF coil section must be always installed upstream of the SVE-DP fan section (regarding the air flow). The coil section for vertical installation is suitable for:

- 3 or 4 row cooling/heating coil for 2 pipe system
- 6 row only for cooling coil for 2 pipe system

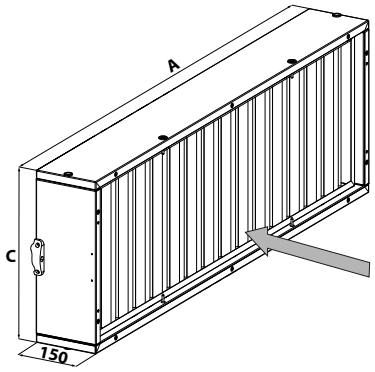


SFS

Filter section

The filter section is available into three variants:

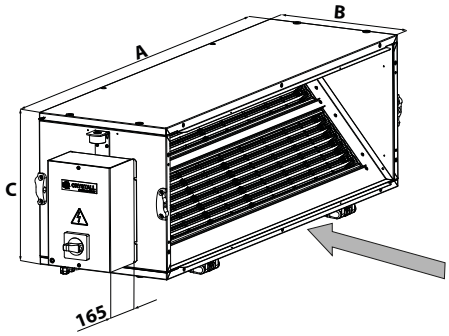
- with G0 filter
- ePM_{10} 50% filter class (ex G4)
- ePM_1 55% filter class (ex F7)



SFE-DP

Crystall section

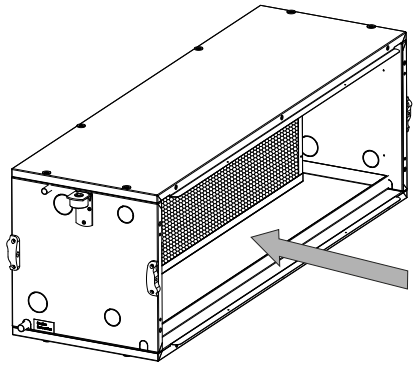
Section with Crystall plate type electrostatic filter



Model	A mm	B mm	B1 mm	C mm
1	1165	370	390	325
2	1165	370	390	325
3	1165	370	390	390
4	1485	440	460	390
5	1485	440	460	450

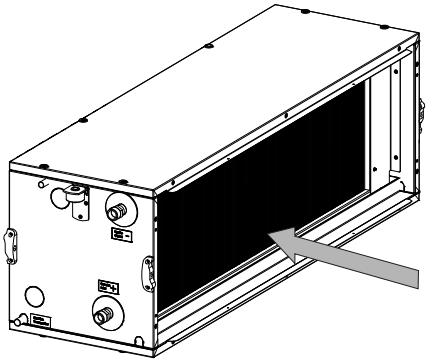
SUD-DP **Humidification section**

made of cellulose honeycomb pad imbued with waterproof resins, frame and distributor that is linear on the upper part. The pad is 100 mm thick and it is of disposable type. The section is equipped with water collection tray.



SB2UD **2 row heating coil + humidifier**

The 2 row heating coil section + humidifier includes within a single module a 2 row coil and a humidification pad. The 2 row coil must be used for heating only.

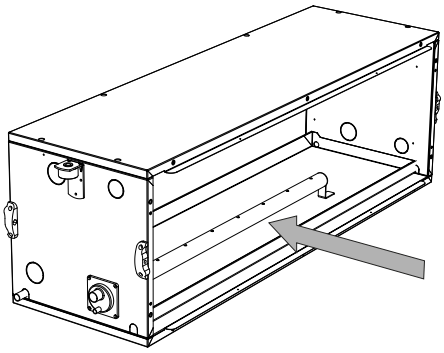


SUD-V **Steam humidification section**

The steam humidification section includes a module with steam nozzle fitted on the unit, to be used only with stand-alone steam generators (not to be used with steam network). The section includes a condensate collection tray.
The steam nozzle is made of stainless steel with:

- upper steam outlets
- condensate return
- 22 mm diameter for the sizes 1 - 2 - 3 and 30 mm for the sizes 4 - 5

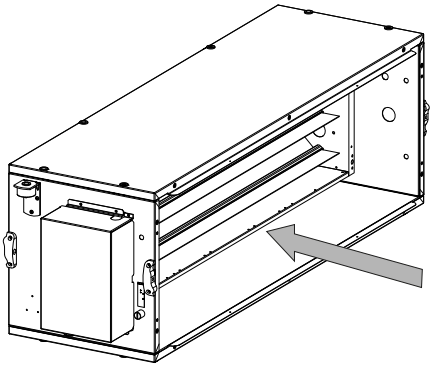
The steam generator is not supplied



SBEL **Electric coil section**

It consists of a series of armoured electric heaters with an aluminium "Y"-shaped form with a high exchange surface, with a safety thermostat with automatic reset and another one with manual reset. The whole section is provided with a control board.
Available versions::

- Single-phase version: 230 Vac / 1 Ph / 50 Hz
- Three-phase version: 400 Vac / 3 Ph / 50 Hz



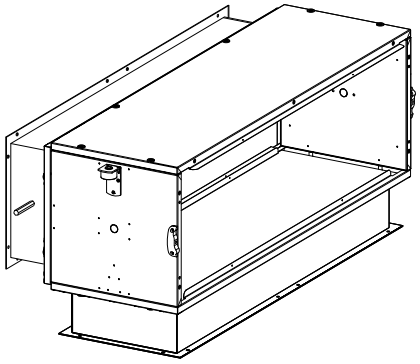
SPS

Plenum section with dampers

It allows to calibrate and mix the exhausted air and the fresh air flows properly.

Available versions:

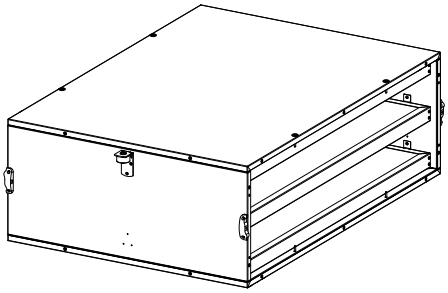
- Plenum with back and lower damper - **SPS-P-I**
- Plenum with back damper - **SPS-P**
- Plenum with lower damper - **SPS-I**



SXS

Silencer section

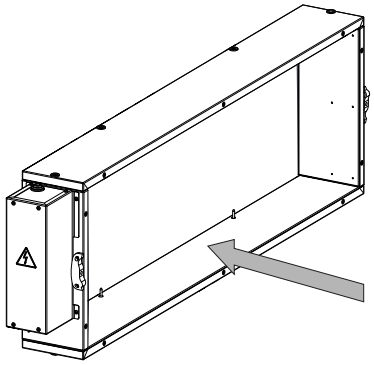
The silencer section can be installed either for the air inlet and the air outlet. it allows a sensible reduction of the noise generated by the unit by means of sound-absorbing materials made of 30 kg/m³, 50 mm thick reinforced glass fibre on both sides, with a black thin layer against the exfoliation.



SLG

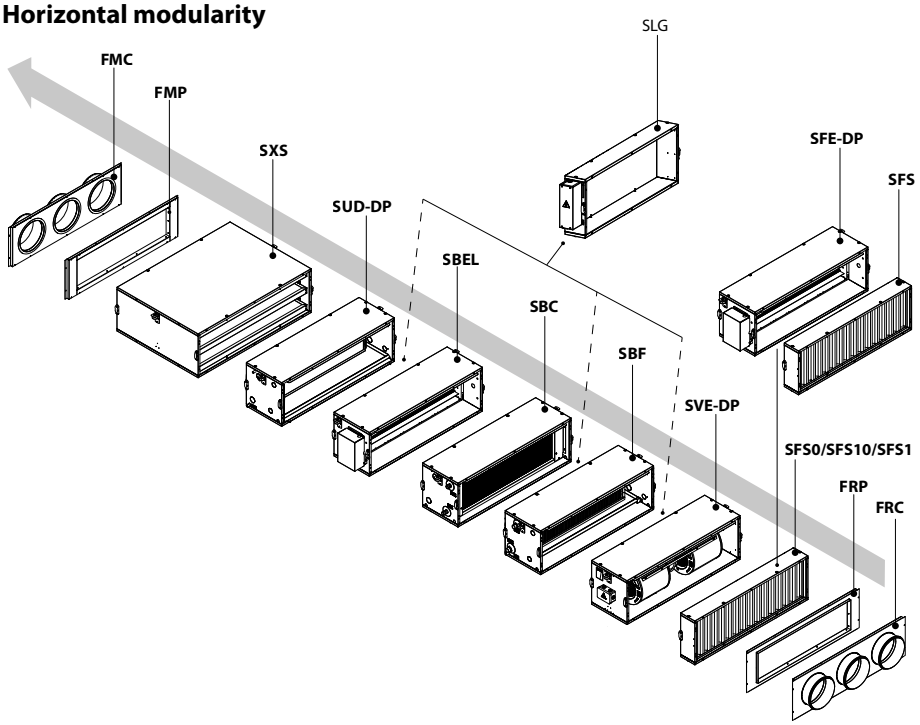
Germicidal lamp section

The germicidal lamp section is useful for the sanitization of the surfaces potentially wet, like the cooling coils with dehumidification and humidification sections. The lamps are installed within the section.



In addition to the available versions using standard components (fan/motor section, coil section and filter section), a wide range of further combinations can be achieved and for each of them you can choose between the five different types of coil.

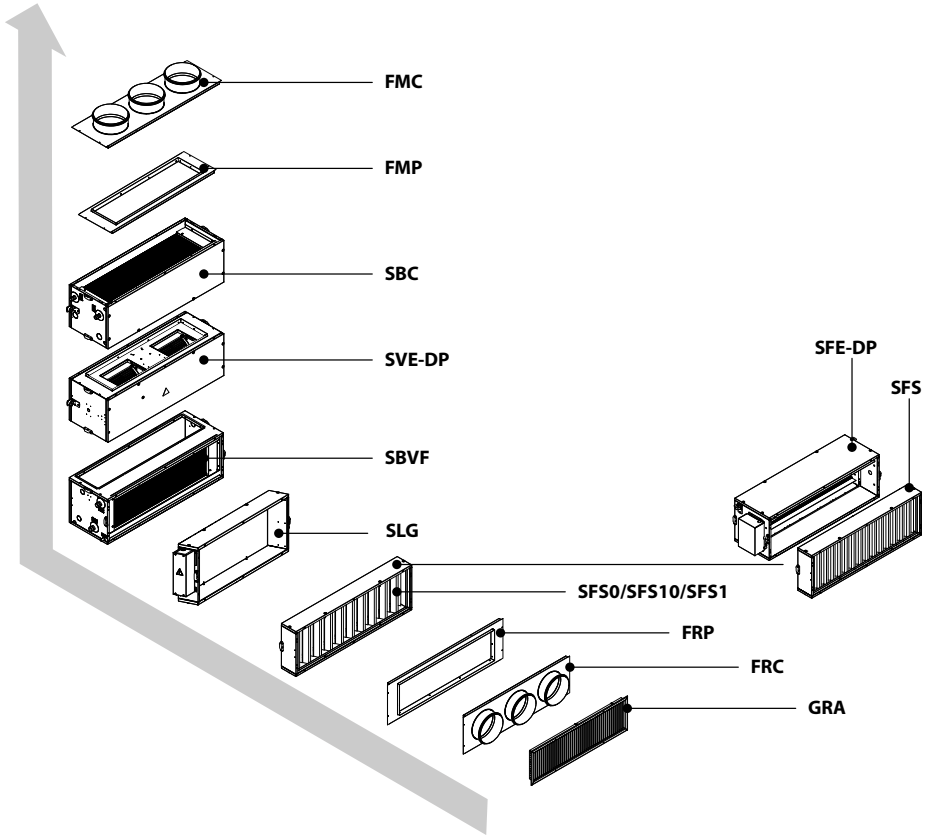
Horizontal modularity



FRC	Air return flange with circular spigots
FRP	Air return flat flange
SFS0	G0 filter section
SFS10	Filter section class ePM_{10} 50% (ex G4)
SFS1	Filter section class ePM_1 55% (ex F7)
SFE-DP	Crystall section
SFS	Filter section
SVE-DP	Fan section
SBF	Cooling coil section
SLG	Germicidal lamp section
SBC	Heating coil section
SBEL	Electric coil section
SUD-DP	Humidification section
SXS	Silencer section
FMP	Air supply flat flange
FMC	Air supply flange with circular spigots

⚠ **SUP-DP humidification section always downstream of the SBC heating coil or SBEL electric coil**

Vertical modularity



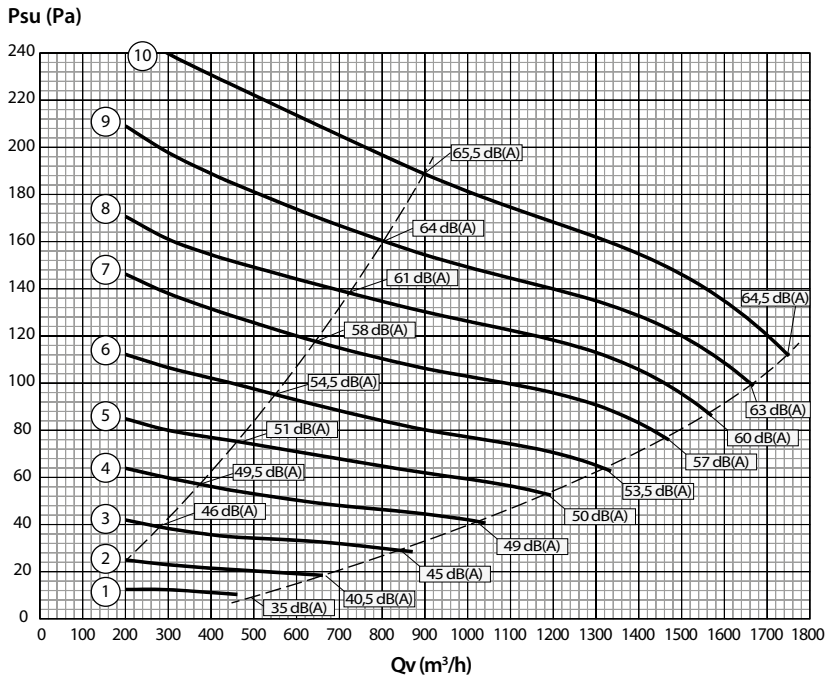
GRA	Air intake grid
FRC	Air return flange with circular spigots
FRP	Air return flat flange
SFS0	G0 filter section
SFS10	Filter section class ePM_{10} 50% (ex G4)
SFS1	Filter section class ePM_1 55% (ex F7)
SFS	Filter section
SFE-DP	Crystall section
SLG	Germicidal lamp section
SBVF	Coil section for vertical installation
SVE-DP	Fan section
SBC	Heating coil section
FMP	Air supply flat flange
FMC	Air supply flange with circular spigots

⚠ **In the vertical composition neither the SUD-DP humidification section nor the SBEL electric coil can be installed**

Model 1

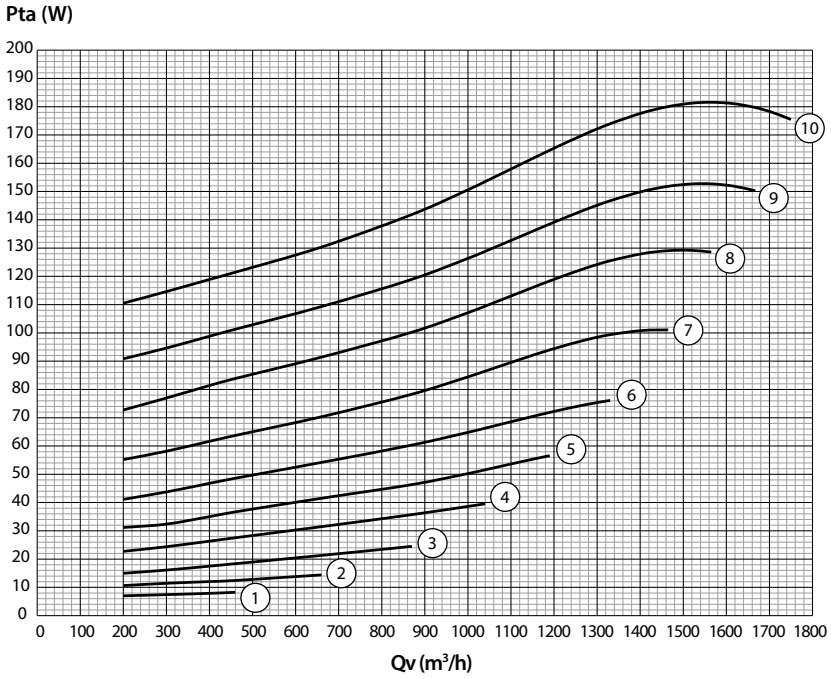
Typical fan curves related to the various voltage supplies of the inverter board.

Flow rate/ Available static pressure



(X) = control voltage
Psu = available static pressure
Qv = flow rate
dB(A) = global sound power

Absorbed electrical power

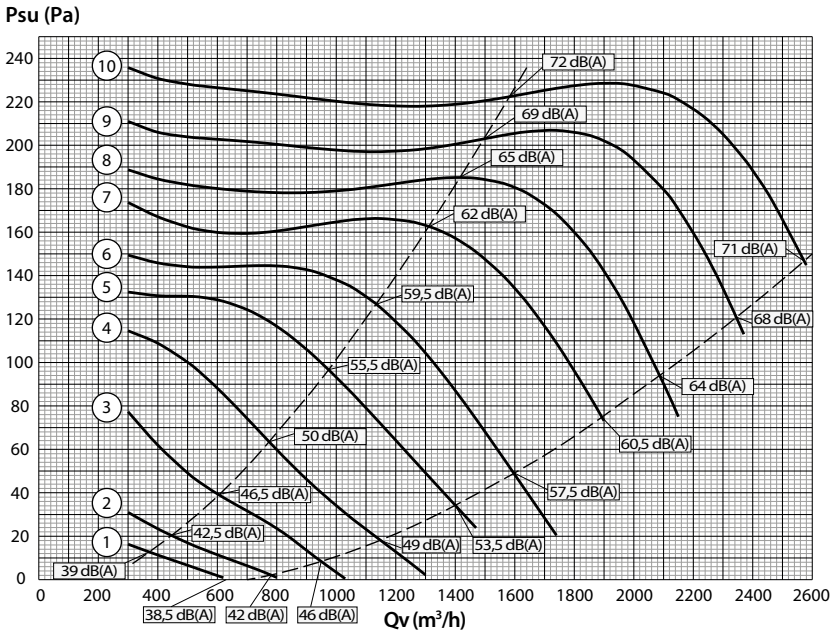


(X) = control voltage
Pta = absorbed electrical power
Qv = flow rate

Model 2

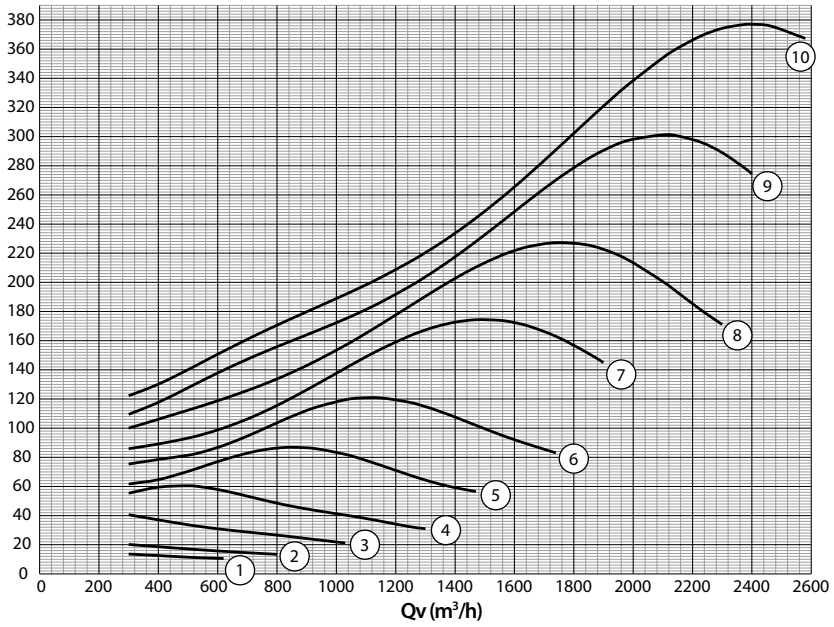
Typical fan curves related to the various voltage supplies of the inverter board.

Flow rate/ Available static pressure



(X) = control voltage
Psu = available static pressure
Qv = flow rate
dB(A) = global sound power

Absorbed electrical power

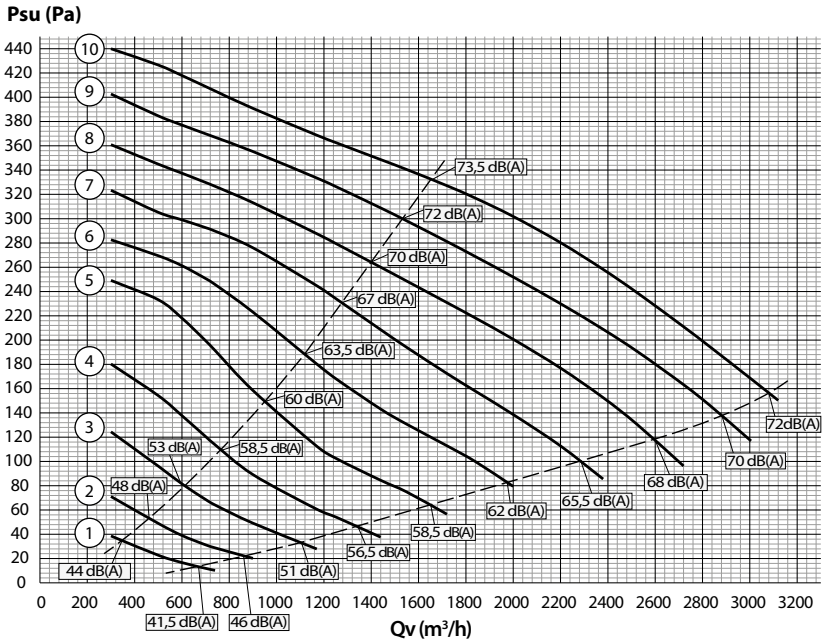


(X) = control voltage
Pta = absorbed electrical power
Qv = flow rate

Model 3

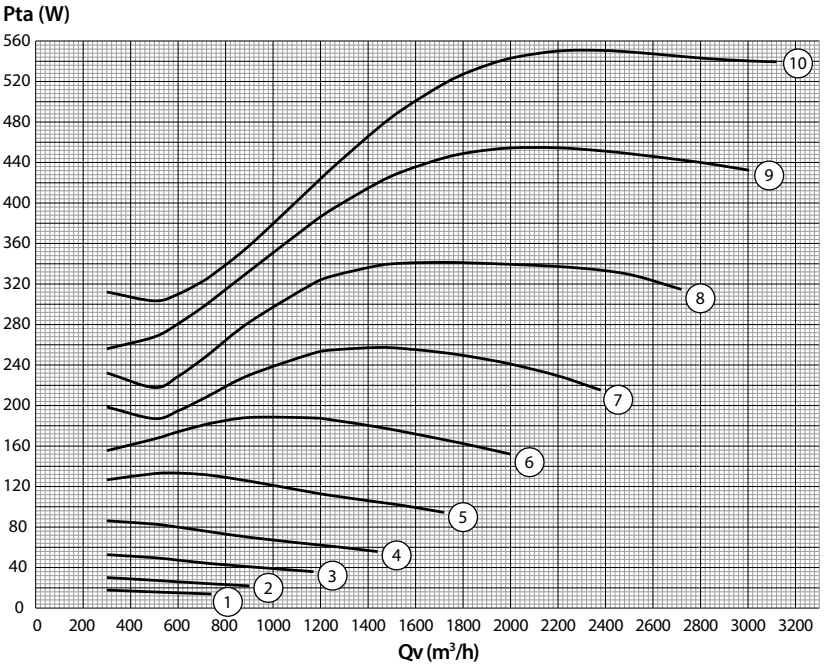
Typical fan curves related to the various voltage supplies of the inverter board.

Flow rate/ Available static pressure



(X) = control voltage
Psu = available static pressure
Qv = flow rate
dB(A) = global sound power

Absorbed electrical power

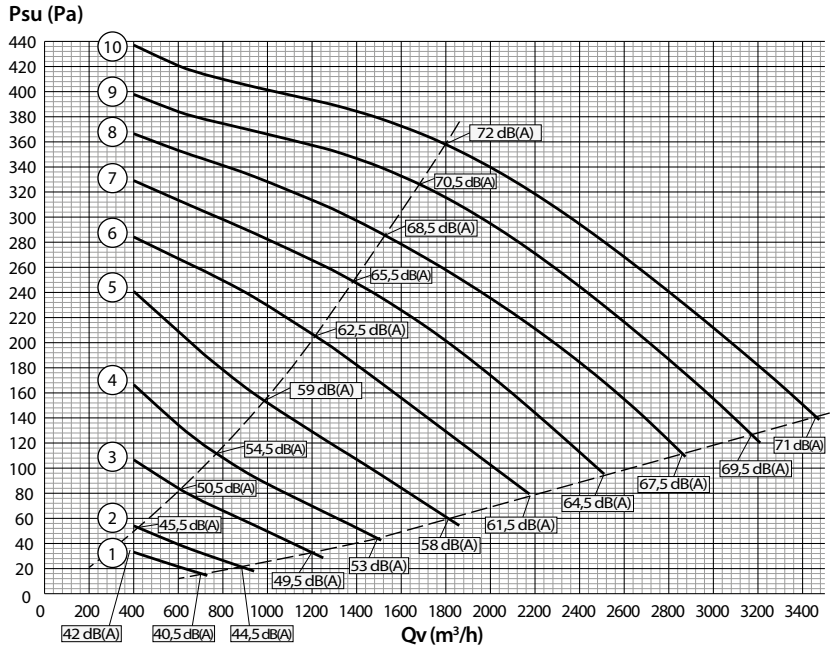


(X) = control voltage
Pta = absorbed electrical power
Qv = flow rate

Model 4

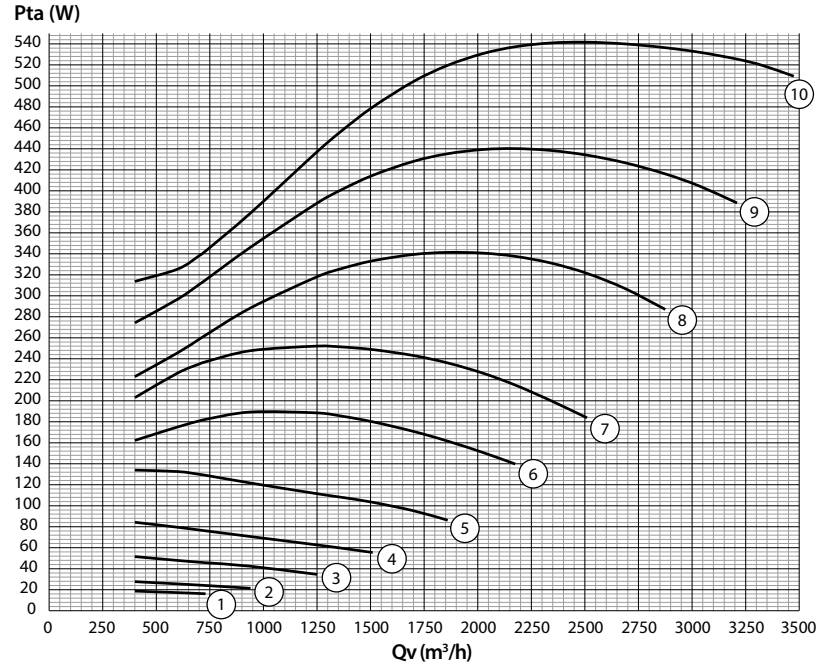
Typical fan curves related to the various voltage supplies of the inverter board.

Flow rate/ Available static pressure



(X) = control voltage
Psu = available static pressure
Qv = flow rate
dB(A) = global sound power

Absorbed electrical power

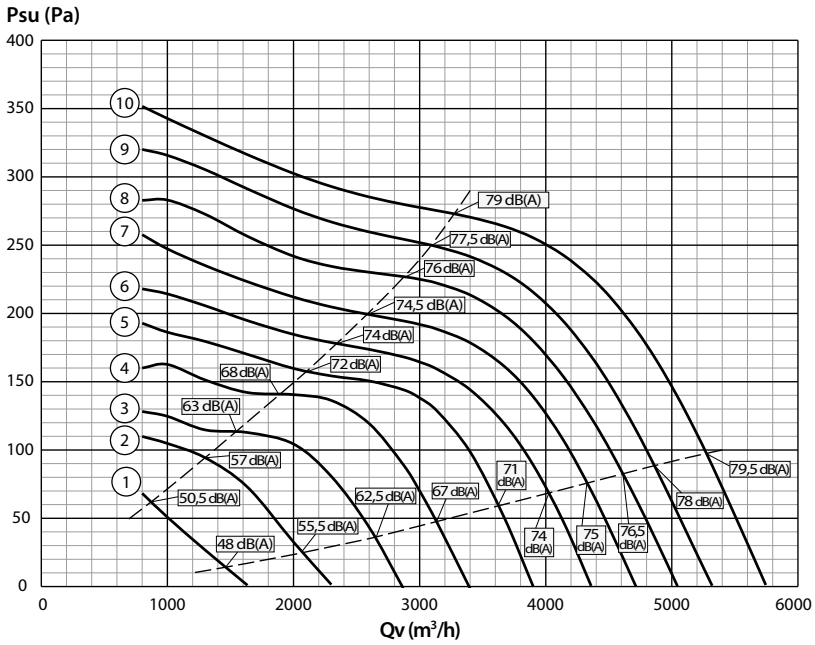


(X) = control voltage
Pta= absorbed electrical power
Qv = flow rate

Model 5

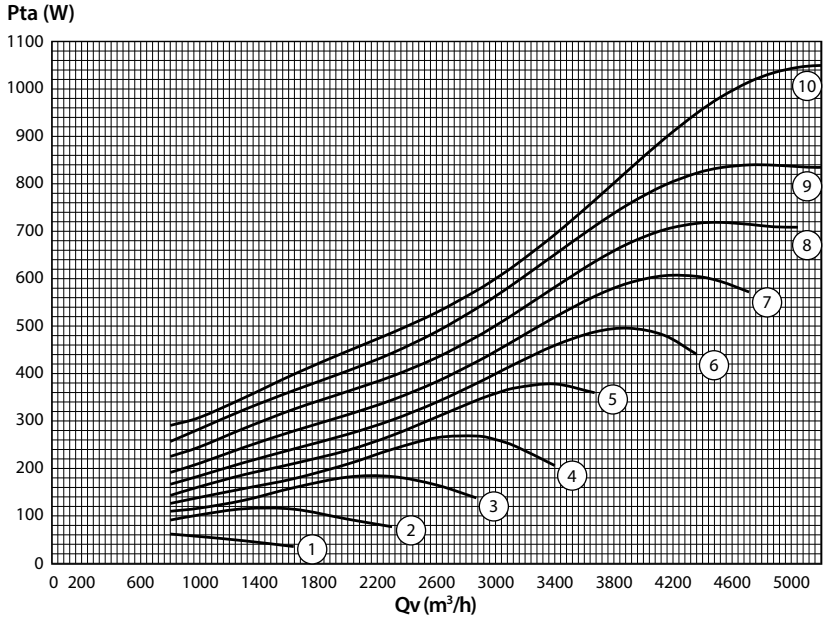
Typical fan curves related to the various voltage supplies of the inverter board.

Flow rate/ Available static pressure



(X) = control voltage
Psu = available static pressure
Qv = flow rate
dB(A) = global sound power

Absorbed electrical power

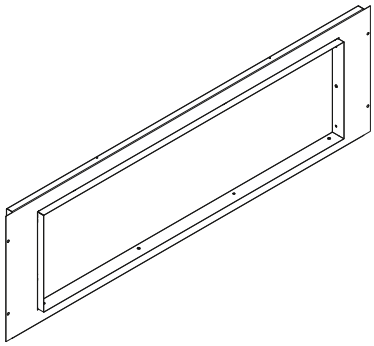
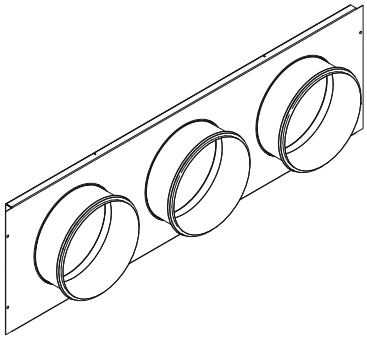
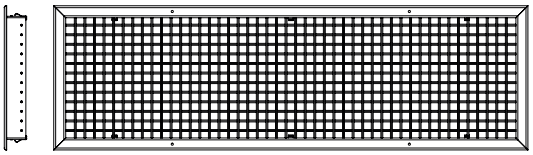
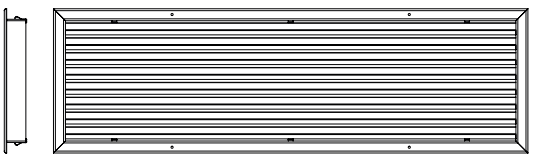


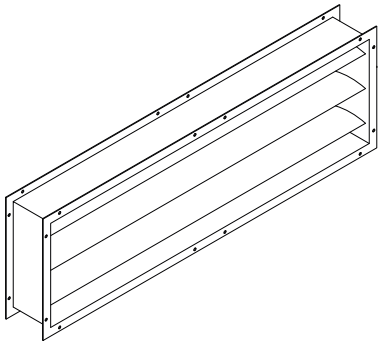
(X) = control voltage
Pta = absorbed electrical power
Qv = flow rate

Range and air flow performance

Model		1	2	3	4	5
Dimensions L x H	mm	1165 x 325		1165 x 390	1485 x 390	1485 x 450
Flow rate range	m^3/h	600 - 1400	1000 - 2200	1200 - 2800	1600 - 3200	2200 - 4600
Available static pressure range	Pa	80 - 210	80 - 220	90 - 360	100 - 370	100 - 300
Irradiated sound pressure range (1)	dB(A)	33 - 48	36 - 53	39 - 56	42 - 59	44 - 63
Cooling emission range (2)	kW	2,96 - 8,08	4,76 - 11,87	5,89 - 15,56	7,80 - 19,51	10,67 - 27,94
Heating emission range (3 - 4 row coils) (3)	kW	4,32 - 10,06	6,87 - 15,27	8,29 - 18,00	11,73 - 22,84	16,14 - 32,50
Heating emission range (1 - 2 row coils) (4)	kW	2,57 - 9,54	3,94 - 14,32	4,73 - 17,79	6,46 - 21,97	8,68 - 29,65
Absorbed electrical power range	W	8 - 186	10 - 380	10 - 550	15 - 530	40 - 1045

(1) The sound power is referred to a room volume of 100 m^2 Sabine, directional factor Q=2 (hemisphere sound emission) and measurement performed at 3 meters from the source; the data are related to the typical curves of a system with medium external pressure. According to the external pressure and to the selected speed, the values can vary ± 4 dB(A) with regard to the declared values.
(2) Cooling emission referred to the following standard rating conditions : entering air temperature 26 °C, 50% relative humidity, water 7 / 12 °C, 3 - 6 row coils.
(3) Heating emission referred to the following standard rating conditions : entering air temperature 20 °C, water 50 / 45 °C, 3 - 4 row coils.
(4) Heating emission referred to the following standard rating conditions : entering air temperature 20 °C, water 60 / 50 °C, 1 - 2 row coils.

VO-230	**230 V ON-OFF VALVE KIT for main and additional coil**	
VO-24	**24 V VALVE KIT for main and additional coil**	
FMP/FRP	**Air supply and return flat flange with rectangular opening**	
FMC/FRC	**Air supply and return flange with circular spigots**	
BMA-DP	**Air outlet grid**	
GRA	**Air inlet grid**	

SRA-DP	**Interception damper**	

Each unit must be supplied with an ADC converter or UPO-AU power unit for wall controls

WM-AU	Automatic speed switch with electronic thermostat and summer/winter switch (to use with UPOM-AU or with UPO-AU power units only)
T-MB2	Wall control with LCD color display and WiFi (to be used with UPOM-AU or with UPO-AU power units only)
UPOM1-AU	UPO-AU power unit for WM-AU and T-MB2 remote controls, fitted on the unit
UPO1-AU	UPO-AU power unit for WM-AU and T-MB2 remote controls, not fitted on the unit

T-MB2

WM-AU

Electronic controls for MB board

QCV-MB2-M 1-6	MB2 version control board, fitted on the unit (T-MB2 control included; it can be used with 24V - 3 points valve or 230V ON-OFF valves)
QCV-MB2-S 1-6	MB2 version control board, not fitted on the unit (T-MB2 control included; it can be used with 24V - 3 points valve or 230V ON-OFF valves)
PSM-DI	PSM-DI multifunction control panel (to be used with QCV-MB2 control panel only)
T-DI	T-DI touch screen multifunction control panel (to be used with QCV-MB2 control panel only)
SabWeb	Web gateway for Sabiana Cloud (to be used with QCV-MB2 control panel only)

Software/Hardware control of several Ocean-ECM Double insulated panel	
Sabianet	Hardware/software supervision system (to be used with QCV-MB2 control panel only)
Router-S	Router for Sabianet (default) or for BMS systems not provided by Sabiana (to be used with QCV-MB2 control panel only)
SIOS	Relay output board (to be used with QCV-MB2 control panel only)

Zeus ECM

Air Handling Unit

The **Zeus** air handling units are suitable for cooling and heating commercial and industrial environments.
They are available in **6 horizontal models** and **6 vertical models**, with air flow from 5.000 to 25.000 m³/h.
Heating capacity **from 32 to 260 kW**, cooling capacity **from 17 to 160 kW**.

The units are made up of a extruded "anticorodal" aluminium section bar frame, connected by fibreglass-reinforced nylon joints.
The casing is made from 25 mm-thick double panelling filled with a layer of high-density polyurethane foam insulation that guarantees a very high degree of thermal insulation, minimising dispersions to the outside.
The metal plate used to make the panels is galvanised and pre-painted white C21 colour (only on the panel outside).
The metal plate used to make the panels is galvanised and pre-painted blue on the outside of the panel.

The Zeus ECM air handling units are equipped with fan motors of EC Plug-Fan type able to provide elevated performances in terms of high available static pressure and low power consumption.

Each unit can be **easily dismantled and reassembled on site**, changing the direction of air flow according to specific needs. The special construction allows the coil and the fan assembly to be easily inspected and removed.

Casing
Casing made of aluminium frame and sandwich panels with polyurethane foam insulation.
Panels and frames are suitable for supporting the required mechanical stresses and reducing both the thermal dispersion with respect to the installation environment and the risks of external surface condensation.
The standard degree of the unit protection is such that it is necessary to install them in closed or covered rooms, with temperatures in the installation environment that do not fall permanently below 0 °C.

Fan assembly
The units are supplied with electronic fans of plug fan type equipped with EC synchronous motors at a high energy efficiency.
The design of the impellers is of the backward curved blade type in order to minimize water leakages.
The fans allow the units to reach available static pressures up to 1000 Pa. Such high pressures may be required in the case of particularly complex multi-zone applications.
Fans are equipped with a pressure probe on the calibrated nozzle of the fan used in the case of control aimed at the target flow rate.

Coils
The coils are supported by a special load-bearing frame and is easily removable and reversible; the coil connection side can be reversed also on the construction site.
The coils are made of copper pipes and aluminium fins, and are made using:
- pipes with 10 mm of diameter for the sizes 50 - 80 - 110.
- pipes with 16 mm of diameter for the sizes 140 - 200 - 250.

The hydraulic connections are made of steel, with male gas threads.
Coils provided:
- 2-3-4 rows for heating only operation
- 3-4-6 rows for cooling operation

The coils are not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.

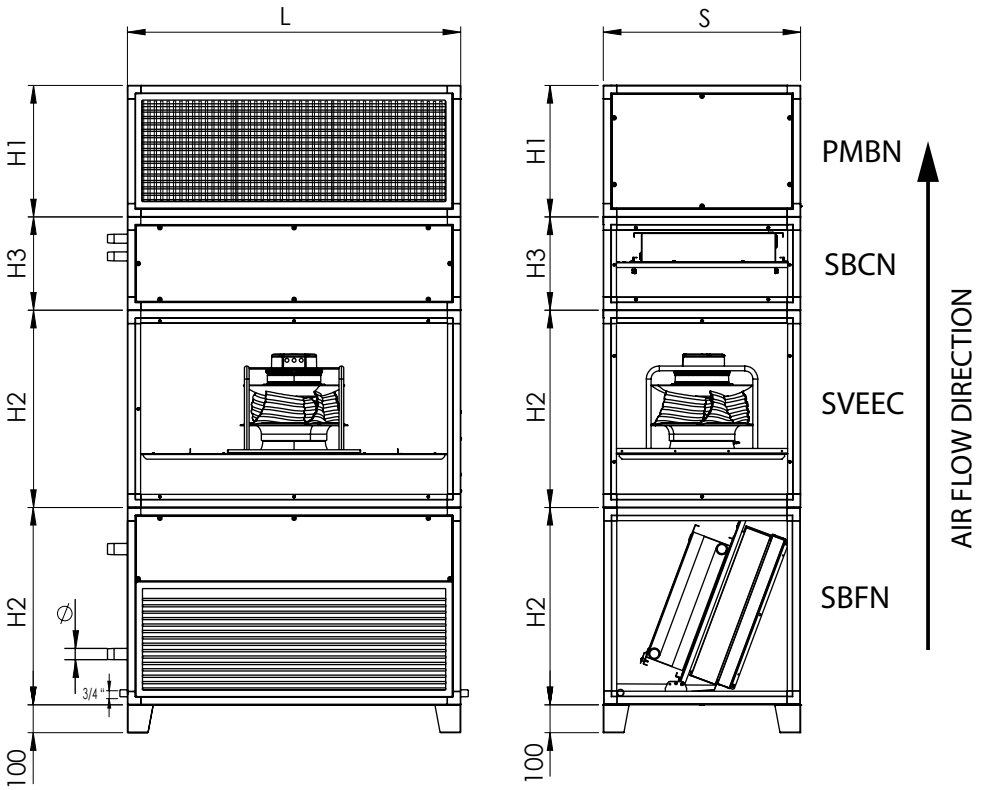
Filters
The units are fitted with synthetic filters in::
- class G3 according to EN 779 standard
- class F1 as regards to resistance to fire, according to DIN 53438 standard

The filters are made from individual cells with a metal frame and galvanized protective mesh.
The filters are removed by default from the same side of the hydraulic connections; it is possible to reverse the side of the removal of the filters on the construction site indipendently of the hydraulic connections.
As proof of the utmost attention paid to air cleanliness and to protect the durability of indoor equipment, the units can be optionally equipped with additional ISO ePM_1 55% filters (Class F7).

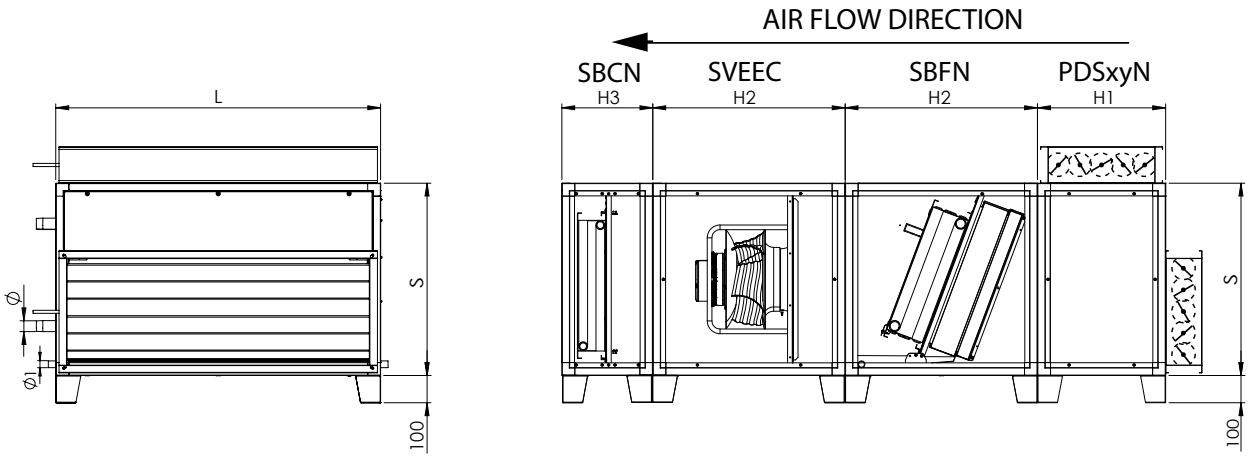
Electric heaters
The TZN 50, 80 and 110 units are available also into the version supplied with fitted electric heater.
The fitted electric heaters are of ON/OFF type with double stage. The accessory control panel allows the regulation of the two heater phases to reach the indoor temperature setpoint.
The heater has a rectangular section, with armoured leads and safety thermostats with automatic and manual reset. In any case, the opening of any safety thermostat causes the emergency shutdown of the heating element.

Adjustment and control system
The units are equipped with external user-installer interface terminal block, where are reported all power connections and regulation signal of the fan assembly.
On demand (optional) it is possibile to add different types of controls, such as the air flow rate/pressure regulator or the complete regulation electric control panel.
In case of electric panel assembly, the units are fully equipped with the necessary electronics and sensors for operational use, such as:
- control board
- optional T-MB2 wall control
- ventilation, electric heater, IAQ electrostatic filter management
- management of valves with actuator 24 Vac of floating 3-point type
- management of valves with actuator 230 Vac of ON/OFF type
- management of 4 pipe installation with a simultaneously presence of fluid (Dead zone)
- operating logic setting for continuous ventilation or simultaneous to the valves opening
- possibility to connect by free contacts the occupancy sensor or window sensor wiring
- possibility of fan interlock with water probe (T3 probe) within the heating coil section

Vertical version (left connections)



AIR FLOW DIRECTION (left connections)



Model		TZN 50	TZN 80	TZN 110	TZN 140	TZN 200	TZN 250
L	mm	1250	1900	1900	2560	2580	2780
S	mm	740	740	870	870	1150	1270
H2	mm	740	740	870	870	1150	1270
H3	mm	350	350	350	350	400	450
H1	mm	490	490	590	590	810	810

Model			TZN 50	TZN 80	TZN 110	TZN 140	TZN 200	TZN 250
Minimum flow rate		m^3/h	3400	5700	8000	10750	15600	18800
Maximum air flow in cooling operating mode		m^3/h	4750	8000	11150	15050	21800	26250
Maximum air flow in heating operating mode		m^3/h	5350	9000	12500	16900	24500	29500
Fan maximum static pressure	Minimum flow rate	Pa	1350	1200	1000	1250	1000	1200
	Cooling maximum air flow	Pa	1200	980	650	1050	400	650
	Heating maximum air flow	Pa	1000	800	450	900	50	300
EC fan								
Power supply		V/n°/Hz	400 3N 50/60HZ					
Maximum power absorption 50 Hz-60 Hz		kW / kW	2,5 / 2,5	3,4 / 3,4	3,5 / 3,5	6,8 / 6,8	6,8 / 6,8	9,2 / 9,2
Maximum current		A / A	3,9 / 3,9	5,2 / 5,2	5,4 / 5,4	10,4 / 10,4	10,4 / 10,4	14,2 / 14,2
Nr° Fan (EC version)		n°	1	1	1	2	2	2
Hydronic coil - dimensions								
H coil pad		mm	500	500	700	660	960	1080
L coil pad		mm	940	1590	1580	2240	2240	2410
Front area		m^2	0,47	0,8	1,11	1,48	2,15	2,61
Diameter of 2 row headers		Ø	1"	1"	1" 1/4	1" 1/2	1" 1/2	2"
Diameter of 3 row headers		Ø	1"	1" 1/4	1" 1/2	1" 1/2	2"	2"
Diameter of 4 row headers		Ø	1"	1" 1/4	1" 1/2	1" 1/2	2"	2" 1/2
Diameter of 6 row headers		Ø	1" 1/4	1" 1/2	1" 1/2	1" 1/2	2"	2" 1/2
Condensate discharge diameter		Ø	3/4 M	3/4 M	3/4 M	3/4 M	3/4 M	3/4 M
Hydronic coil - Rated Performance								
Rated air flow		m^3/h	4400	7400	10400	14000	20200	24500
		l/s	1222	2056	2889	3889	5611	6806
3 row coil maximum cooling emission (1)	Total	kW	17	28,9	40	54,4	78,8	101,6
	Sensible	kW	14	23,8	32,8	41,6	60,2	75,5
4 row coil cooling emission (1)	Total	kW	20,8	35,5	50,5	72,1	104,4	126,5
	Sensible	kW	16,4	28	39,4	51,1	74	89,6
6 row coil cooling emission (1)	Total	kW	26,7	45,5	63,9	92,5	134	160,9
	Sensible	kW	19,4	33	46	62,7	90,8	109,1
2 row coil heating emission (2)		kW	32,4	54,4	76,1	98,9	142,4	171,6
3 row coil heating emission (2)		kW	42,4	71,2	99,7	129,1	186,9	226,3
4 row coil heating emission (2)		kW	49,8	83,7	117,1	151,3	219,1	263,2
Electric heater								
Heating emission / electrical absorption		kW	14	20	22	-	-	-
Electric heater current absorbed		A	20,5	29	32	-	-	-

(1) Air 27 °C 50% UR - Water 7-12 °C
(2) Air 20 °C - Water 70-60 °C. For the SBCN sections the highest inlet temperature allowed is 60 °C.

Weight (kg)

Model	Rows	SBFN cooling coil section	SBCN heating coil section	SVEEC fan section	Plenum sections
TZN 50	2	92	72	85	40
	3	95	76		
	4	100	80		
	6	108	-		
TZN 80	2	132	106	125	55
	3	140	114		
	4	145	118		
	6	158	-		
TZN 110	2	159	125	156	65
	3	167	133		
	4	177	143		
	6	195	-		
TZN 140	2	208	167	210	85
	3	224	184		
	4	240	200		
	6	272	-		
TZN 200	2	300	237	260	120
	3	320	257		
	4	345	283		
	6	390	-		
TZN 250	2	354	280	335	140
	3	381	307		
	4	409	333		
	6	470	-		

Water content (litres)

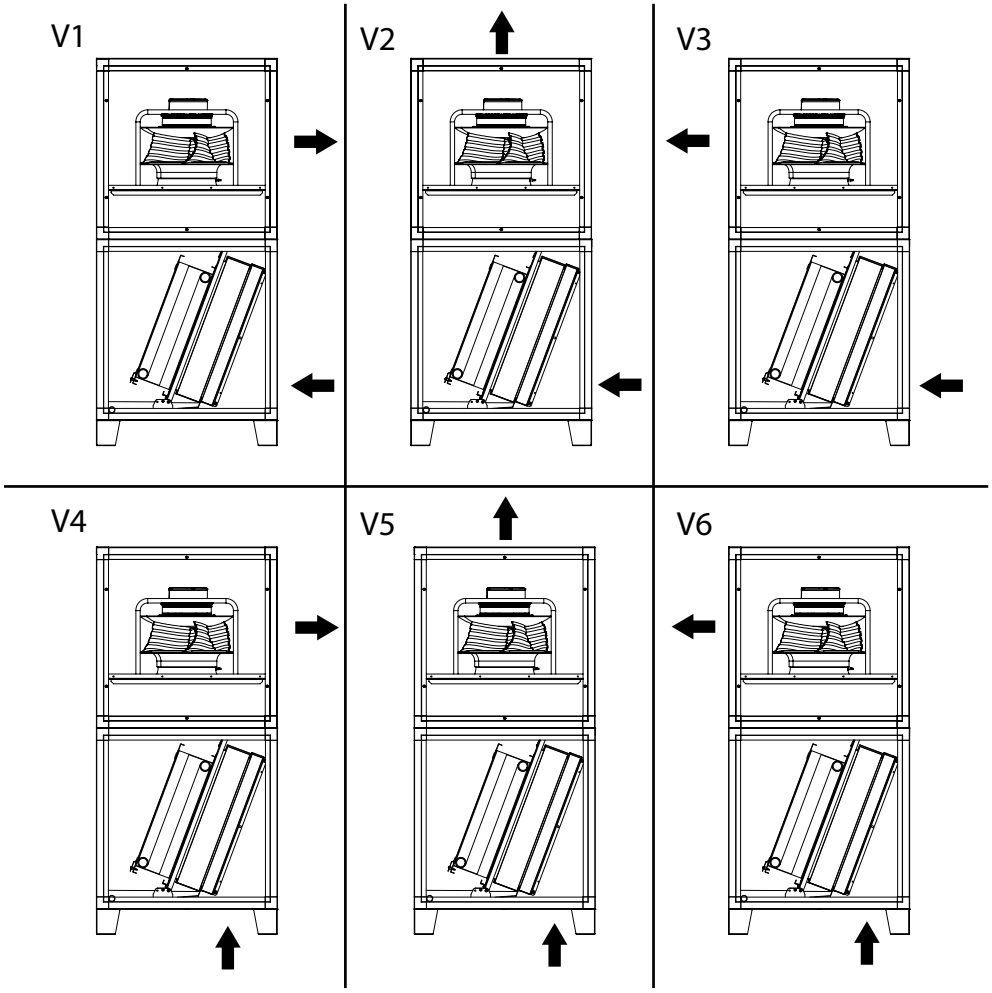
Model	Coil (rows)			
	2	**3**	**4**	**6**
TZN 50	3,2	4,6	6,2	8,2
TZN 80	5,3	7,7	10,2	14,8
TZN 110	7,2	10,7	14,3	20,9
TZN 140	10,2	15,3	20,4	30,4
TZN 200	15,3	22,5	29,4	44,5
TZN 250	18,4	27,5	37,5	55,6

Max. temperature limits for the supply of the SBFN and SBCFN sections

T_{max} coil power supply	TZN 50	TZN 80	TZN 110	TZN 140	TZN 200	TZN 250
2R	80 °C	80 °C	80 °C	80 °C	80 °C	60 °C
3R	80 °C	80 °C	80 °C	80 °C	80 °C	60 °C
4R	70 °C	70 °C	70 °C	70 °C	70 °C	60 °C
6R	60 °C	60 °C	60 °C	60 °C	60 °C	50 °C

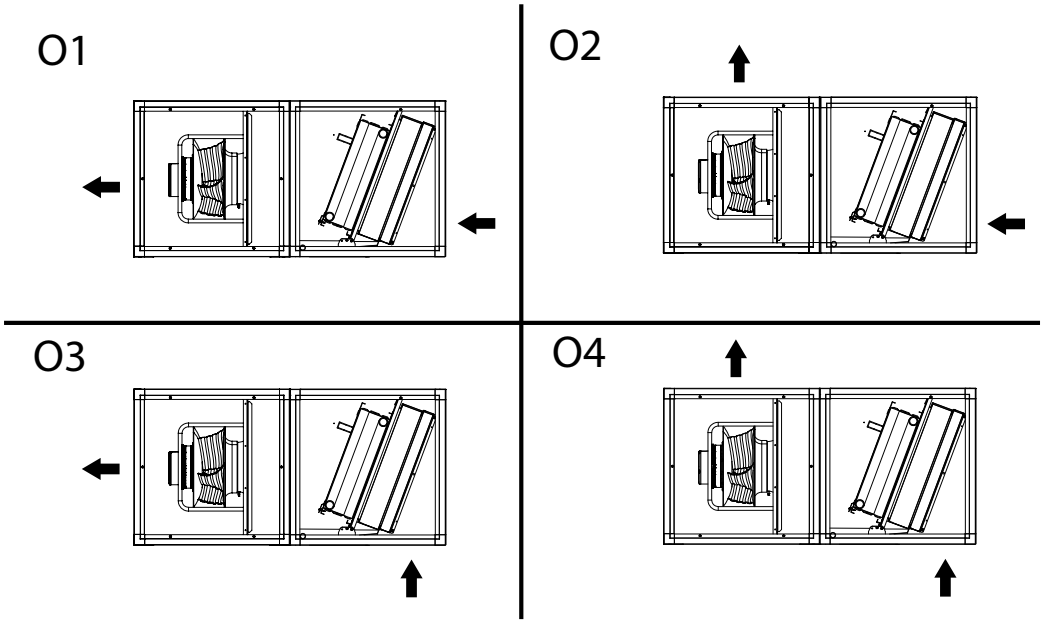
Vertical installation

Air intake and outlet position (with standard connections on the left)



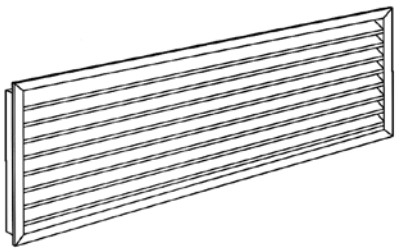
Horizontal installation

Air intake and outlet position (with standard connections on the left)

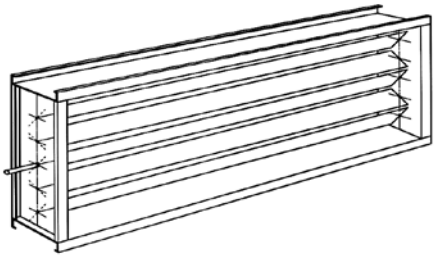


SBFN sections

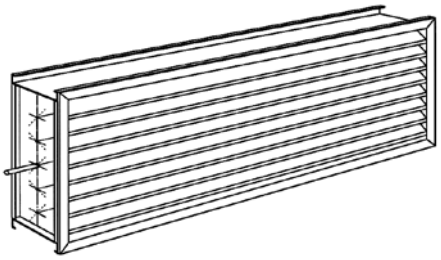
GASF **Aluminium inlet grid**



SRASF **Galvanized inlet damper**

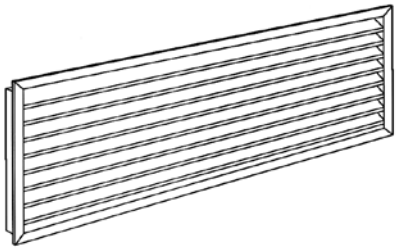


SRAGF **Galvanized inlet damper with inlet grid**

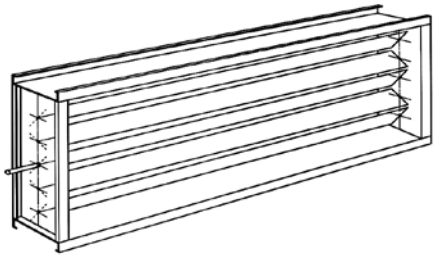


SBCN and SBCFN sections

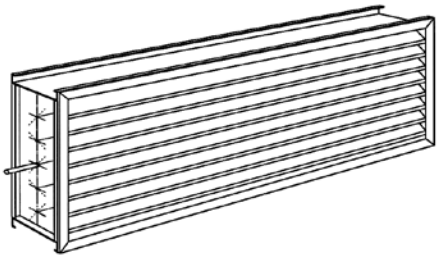
GASC **Aluminium inlet grid**



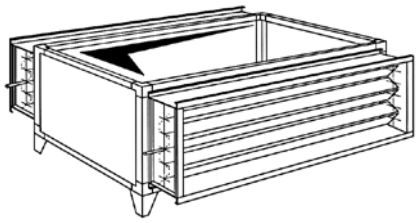
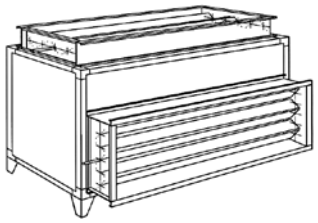
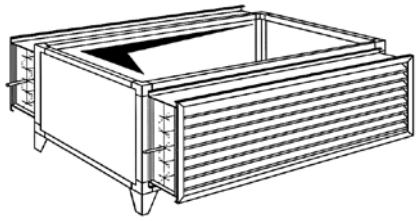
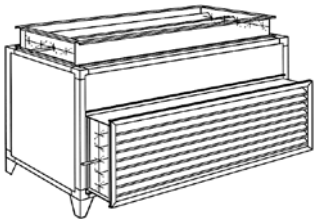
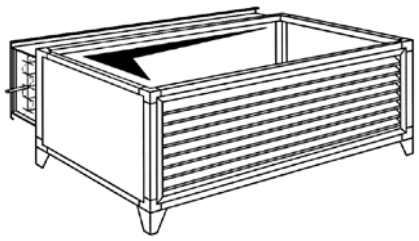
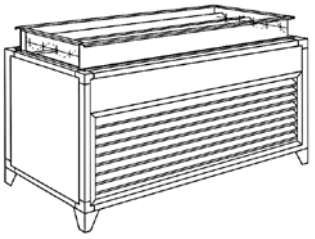
SRASC **Galvanized inlet damper**



SRAGC **Galvanized inlet damper with inlet grid**

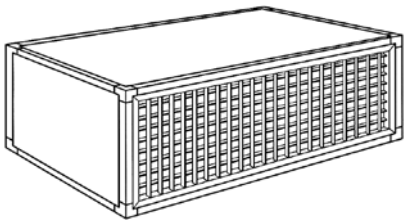


Return sections

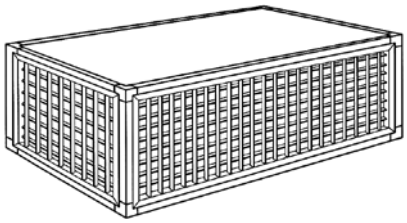
PDSVN	**Mixing section with 2 galvanized dampers** (vertical model)	
PDSON	**Mixing section with 2 galvanized dampers** (horizontal model)	
PDSGVN	**Mixing section with 2 galvanized dampers and inlet grid** (vertical model)	
PDSGON	**Mixing section with 2 galvanized dampers and inlet grid** (horizontal model)	
PGSVN	**Mixing section with galvanized damper and inlet grid** (vertical model)	
PGSON	**Mixing section with galvanized damper and inlet grid** (horizontal model)	

Supply sections

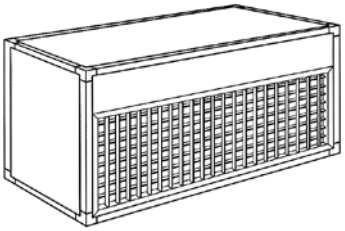
PMBN 1VV — **Supply section with outlet grid with double louvre set** (vertical model)



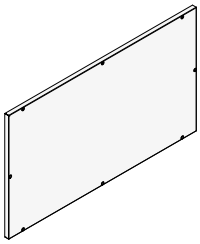
PMBN 3VV — **Supply section with 3 outlet grids with double louvre set** (vertical model)



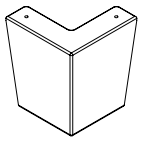
PMBN 1VO — **Supply section with outlet grid with double louvre set** (horizontal model)



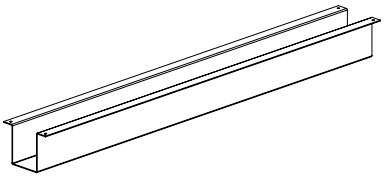
PC-TZN — **Blind panel for duct connection**



PAP-Z — **Supplementary feet kit for horizontal installation (mandatory)**



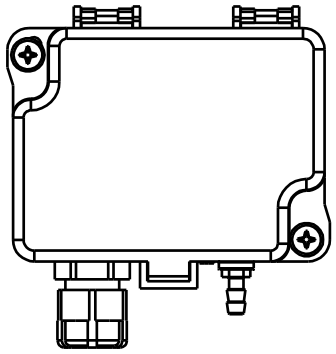
TZN 50-80-110



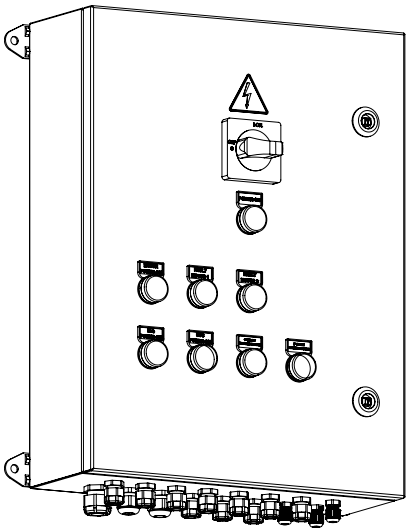
TZN 140-200-250

F70-Z — **ePM$_1$ 70% (F7) additional filters set**

Pressure transducer module
Regulation module for volumetric flow or pressure control



QCV-MB2-TZN-ECM control panel



T-MB2
To be used only with QCV-MB2-TZN-ECM regulation control panel

Titan
Air Handling Unit

The **Titan** air handling units are built in compliance with the European standards and directives, are certified by EUROVENT and are in compliance with the mandatory standard according to the European Ecodesign Directive (UE 1253/2014 Regulation).
They are designed to satisfy all design requirements for air conditioning systems in which the reduction of noise levels, high air quality and minimum energy consumption are fundamental aspects in assessing the quality of the installation.

The Titan range allows to choose between two different casings: one with panelling 50 mm thick and the other one 60 mm thick with thermal break.

The main feature that distinguishes the casing with panels 50 mm thick concerns the **special design** of the aluminium frame that make up the structure, aimed at creating perfectly smooth inside walls, **without gaps or protrusions**, so as to simplify cleaning and allow access to the components from the side.

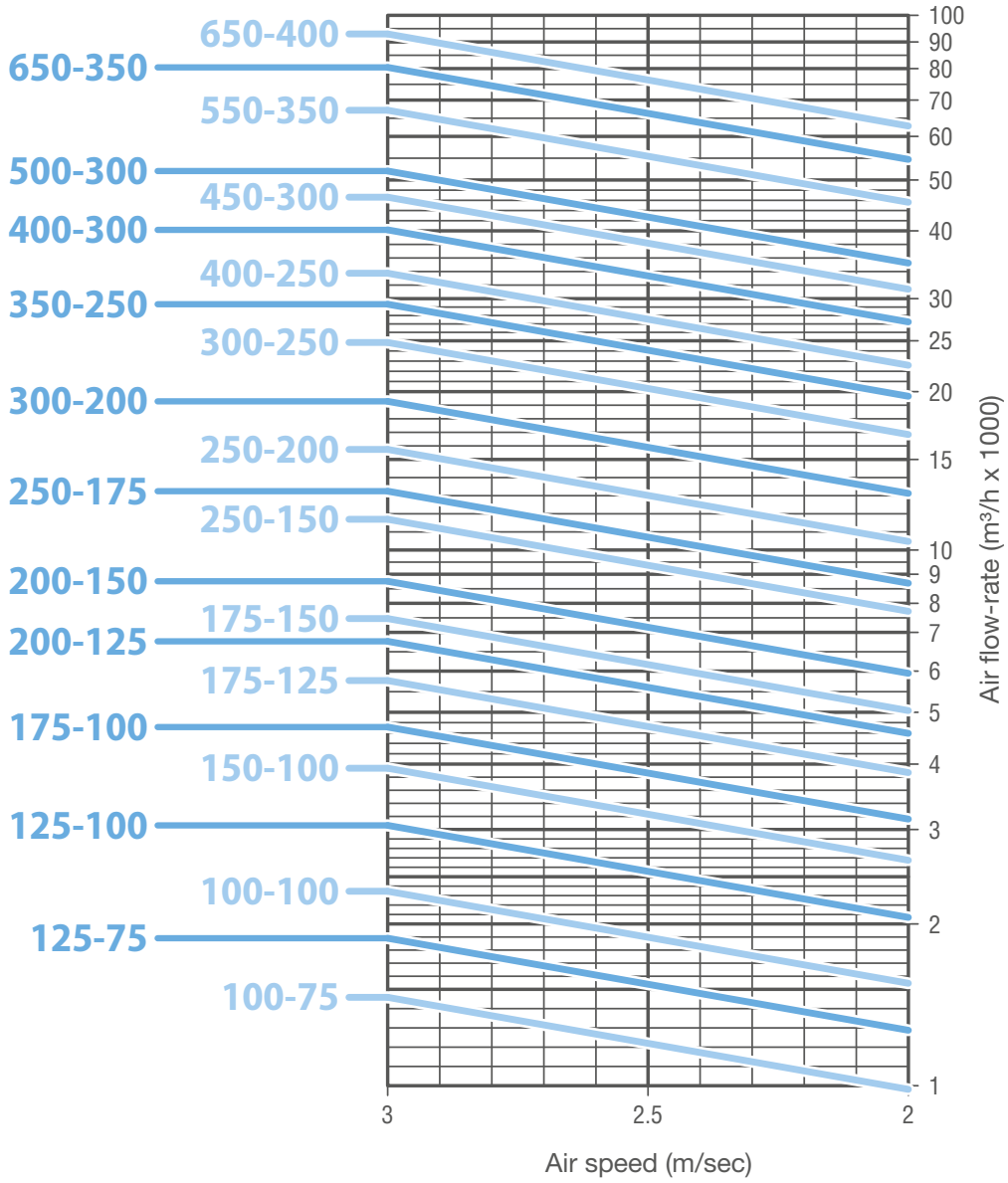
External plate sandwich panels with the inside and outside surface made of different materials: galvanised steel, pre-painted galvanised steel, Peraluman or stainless steel with high density polyurethane foam thermal insulation or made of mineral wool, so as to guarantee maximum safety in the event of fires (no toxic gases are released), with effective sound absorption.

The **Titan** air handling units are available in **23 sizes** that can be easily selected using the diagram shown below, based on the air speed through the coil.

To simplify selection, it must be stressed that in both cooling/dehumidification and heating/humidification, the correct air speed is essential **to avoid entraining drops**.

It is therefore recommended to use a **droplet separator** for humidification and dehumidification when the air speed exceeds 2.5 m/sec.

In humidification and cooling/dehumidification, the maximum speed of 2.8 m/sec should **not be exceeded**.



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The casing

There are two available casings: 50SD, standard, and 60TT with thermal break.

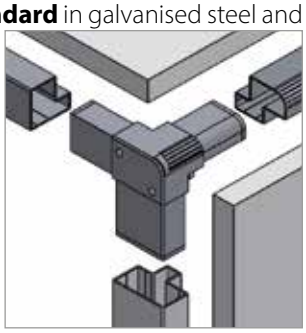
50SD supporting frame

Supporting frame made from extruded aluminium alloy section bars, natural colour.

Joints of die-cast aluminium.

Sandwich panels, 50 mm thick in case available

- **Outer standard** in pre-painted galvanised steel, light grey colour, C21; **inner standard** in galvanised steel and **insulation** in injected polyurethane, density 45 kg/m³.
- **Upon request outer and inner** in galvanised steel, pre-painted galvanised steel, AISI 304 stainless steel and **insulation** in mineral wool, density 90 kg/m³.
- **Assembly** using galvanised steel self-threading screws of tixotropic polyretanic gasket inserted between the sections and the panels. All the screws are in bushes.



Access doors same construction as the panels, fitted with reinforced hinges and locking device, complete with sealing gasket, safety switch for fan sections and, upon request, fitted with inspection window.

Base frame made of a "**C-shaped**" galvanized steel sheet or of aluminium extruded profiles, fitted with eyebolts for handling, arranged around the perimeter of each section.

Characteristics with polyurethane insulation - panel 50 mm thick
RIF: MB TITAN PU 50 NEW

Specifications of the casing according to UNI-EN 1886 Standard	
Casing strength	**D1**
Casing air leakage at -400 Pa	**L1**
Casing air leakage at +400 Pa	**L1**
Filter bypass leakage	**F9**
Thermal transmittance	**T2**
Thermal bridging factor	**TB3**

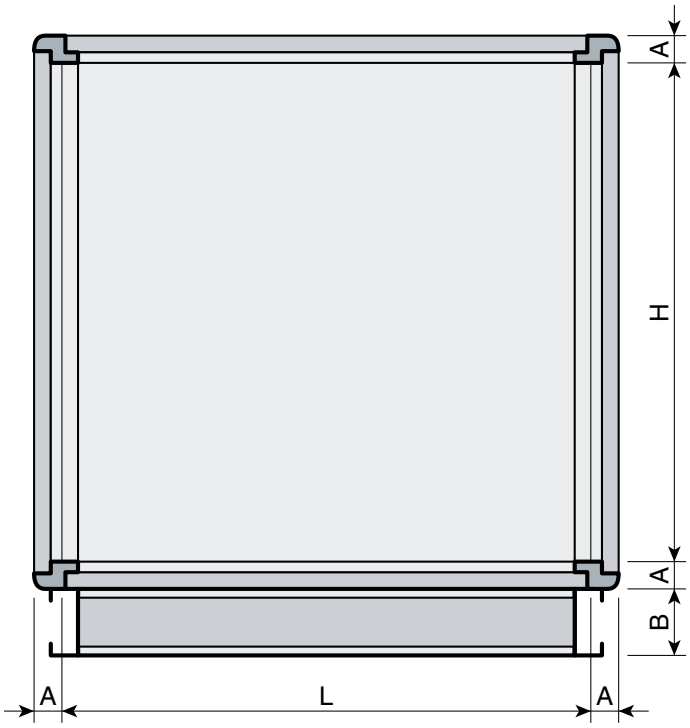
Sound attenuation	
Frequency (Hz)	**50 mm thick panels with polyurethane**
125	dB 17
250	dB 12
500	dB 12
1K	dB 13
2K	dB 17
4K	dB 34
8K	dB 36

Characteristics with mineral wool insulation - panel 50 mm thick
RIF: MB TITAN RW 50 NEW

Specifications of the casing according to UNI-EN 1886 Standard	
Casing strength	**D2**
Casing air leakage at -400 Pa	**L1**
Casing air leakage at +400 Pa	**L1**
Filter bypass leakage	**F8**
Thermal transmittance	**T2**
Thermal bridging factor	**TB3**

Sound attenuation	
Frequency (Hz)	**50 mm thick panels with mineral wool insulation**
125	dB 21
250	dB 18
500	dB 18
1K	dB 27
2K	dB 31
4K	dB 34
8K	dB 37

FRONT DIMENSIONS



Size	Measurement (mm)	
	L	H
100 - 75	650,0	457,5
100 - 100	650,0	610,0
125 - 75	802,5	457,5
125 - 100	802,5	610,0
150 - 75	955,0	457,5
150 - 100	955,0	610,0
175 - 100	1107,5	610,0
175 - 125	1107,5	762,5
175 - 150	1107,5	915,0
200 - 100	1260,0	610,0
200 - 125	1260,0	762,5
200 - 150	1260,0	915,0
250 - 150	1565,0	915,0
250 - 175	1565,0	1067,5
250 - 200	1565,0	1220,0
300 - 150	1870,0	915,0
300 - 200	1870,0	1220,0
300 - 250	1870,0	1525,0
350 - 175	2175,0	1067,5
350 - 250	2175,0	1525,0
400 - 200	2480,0	1220,0
400 - 250	2480,0	1525,0
400 - 300	2480,0	1830,0
450 - 300	2785,0	1830,0
500 - 250	3090,0	1525,0
500 - 300	3090,0	1830,0
550 - 350	3395,0	2135,0
600 - 300	3700,0	1830,0
650 - 325	4005,0	1982,5
650 - 350	4005,0	2135,0
650 - 400	4005,0	2440,0

A = 50 mm (corresponds to the thickness of the panels)
Base: **B = 80/100*/120 mm**
*** =** extruded aluminium

The lengths of the sections and the corresponding weights must be obtained from the selection software.

60TT profile with thermal break

Supporting frame made from extruded aluminium alloy section bars, natural colour with thermal break.

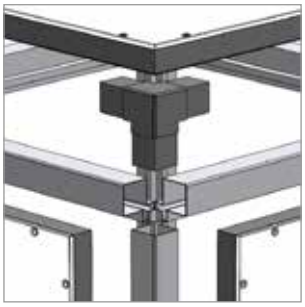
Joints in glass reinforced nylon.

Sandwich panels with thermal break, 60 mm thick, made from the following materials:

- **Standard**
  outer: pre-painted galvanised steel, light grey colour, C21
  inner: galvanised steel insulation injected polyurethane, density 45 kg/m^3.

- **Upon request**
  outer and inner: galvanised steel - pre-painted galvanised steel - AISI 304 stainless steel
  insulation: mineral wool, density 90 kg/m^3.

- **Assembly** using galvanised steel self-threading screws, with Neoprene self-adhesive gaskets inserted between the sections and the panels. All the screws are in bushes.



Access doors same construction as the panels, fitted with reinforced hinges and locking device, complete with sealing gasket, safety switch for fan sections and, upon request, fitted with inspection window.

Base frame made of **C-shaped** thick galvanised steel sheet metal or aluminium extruded profiles, secured to the base profiles of the individual modular sections and having perimeter holes to engage the lifting device.

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Characteristics with polyurethane insulation - panel 60 mm thick

RIF: MB IPERION MB_DWTB_P60.60_PU

Specifications of the casing according to UNI-EN 1886 Standard	
Casing strength	**D1**
Casing air leakage at -400 Pa	**L1**
Casing air leakage at +400 Pa	**L1**
Filter bypass leakage	**F9**
Thermal transmittance	**T1**
Thermal bridging factor	**TB2**

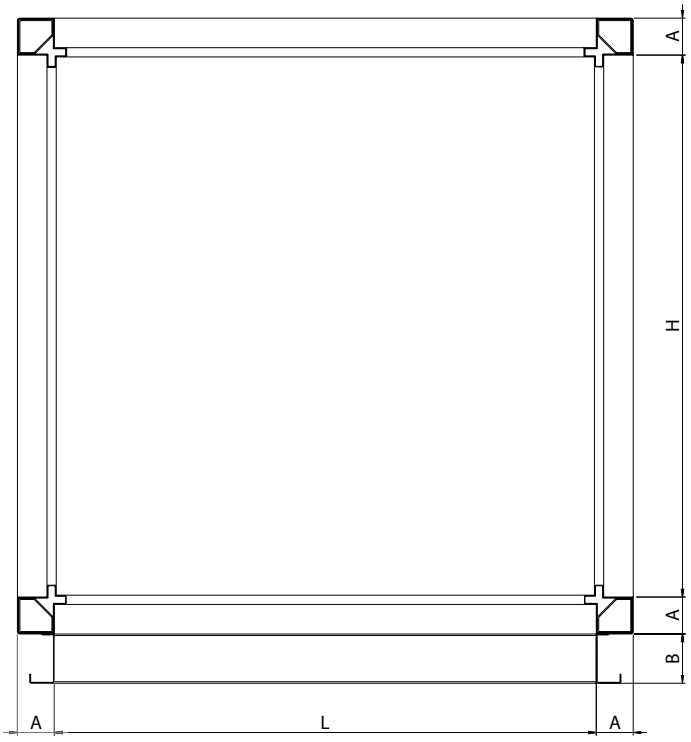
Sound attenuation	
Frequency (Hz)	**60 mm thick panels with polyurethane**
125	dB 8
250	dB 10
500	dB 14
1K	dB 12
2K	dB 13
4K	dB 30
8K	dB 36

Characteristics with mineral wool insulation - panel 60 mm thick

RIF: MB IPERION DWTB_P60.60_RW

Specifications of the casing according to UNI-EN 1886 Standard	
Casing strength	**D1**
Casing air leakage at -400 Pa	**L1**
Casing air leakage at +400 Pa	**L1**
Filter bypass leakage	**F8**
Thermal transmittance	**T2**
Thermal bridging factor	**TB2**

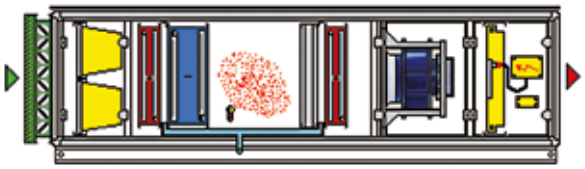
Sound attenuation	
Frequency (Hz)	**60 mm thick panels with mineral wool insulation**
125	dB 10
250	dB 13
500	dB 17
1K	dB 17
2K	dB 26
4K	dB 33
8K	dB 40



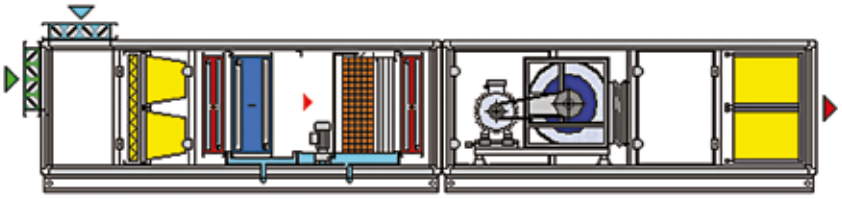
A = 60 mm (corresponds to the thickness of the panels)
Base: **B = 80/100*/120 mm**
*** =** extruded aluminium

The lengths of the sections and the corresponding weights must be obtained from the selection software.

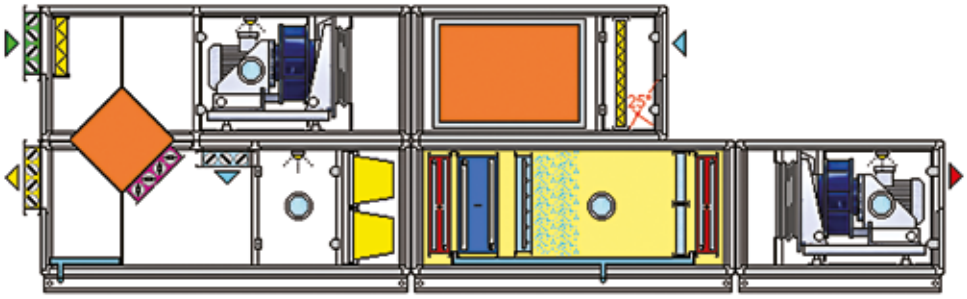
Size	Measurement (mm)	
	L	H
100 - 75	650,0	497,5
100 - 100	650,0	650,0
125 - 75	802,5	497,5
125 - 100	802,5	650,0
150 - 75	955,0	497,5
150 - 100	955,0	650,0
175 - 100	1107,5	650,0
175 - 125	1107,5	802,5
175 - 150	1107,5	955,0
200 - 100	1260,0	650,0
200 - 125	1260,0	802,5
200 - 150	1260,0	955,5
250 - 150	1565,0	955,0
250 - 175	1565,0	1107,5
250 - 200	1565,0	1260,0
300 - 150	1870,0	955,0
300 - 200	1870,0	1260,0
300 - 250	1870,0	1565,0
350 - 175	2175,0	1107,5
350 - 250	2175,0	1565,0
400 - 200	2480,0	1260,0
400 -250	2480,0	1565,0
400 - 300	2480,0	1870,0
450 - 300	2785,0	1870,0
500 - 250	3090,0	1565,0
500 - 300	3090,0	1870,0
550 - 350	3395,0	2175,0
600 - 300	3700,0	1870,0
650 - 325	4005,0	2022,5
650 - 350	4005,0	2175,0
650 - 400	4005,0	2480,0



Outdoor monoblock unit with protective cover, rain protection grill with bird guards, on-off damper, F6 pre-filters, treatment section with pre-heating, cooling and dehumidification coil, steam and post-heating coil.
Motor fan section with plug-fan unit equipped with electronic brushless motor with controller and **filtration with SABIANA Crystall electrostatic filters**.



Double deck unit with mixing chamber, G4+F9 pre-filters, treatment section with pre-heating, cooling and dehumidification coil, honeycomb pack humidifiers with recirculation and post-heating coil.
Motor-fan section with centrifugal transmission ventilator designed to be controlled by inverter board (according to the European Ecodesign Directive) and H13 absolute filtration.



Double deck unit with heat recovery of not less than 67% efficiency and equipped with by-pass damper for free-cooling (according to the European Ecodesign Directive) and with recirculation louvre, M6 filters at the fresh air inlet and recirculation, F9 filters, air handling section with stainless steel panels inside, treatment section with pre-heating, cooling and dehumidification coil, spray nozzle humidifier with droplet separator and post-heating coil. Fan sections with plug-fan assembly supplied controlled by Inverter board (according to the European Ecodesign Directive) the inlet silencer, lights and openings

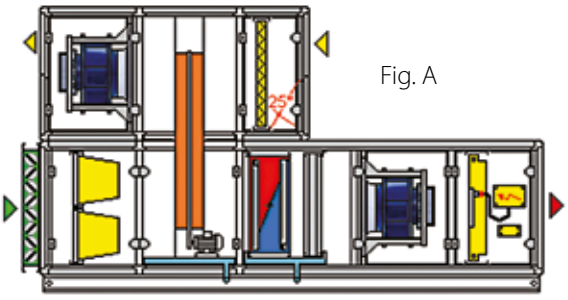


Fig. A

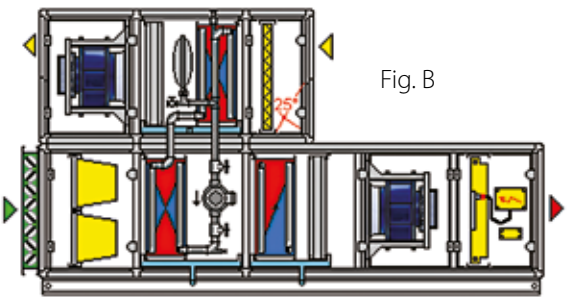


Fig. B

Double deck unit with G4 filter for the exhaust air and M6 pre-filter for the fresh air.
Wheel recovery unit (fig.A) and recovery coils (fig.B). Air handling with a single heat/cool coil with droplet separator.
Fan section with plug-fan assembly with brushless electronic motor with controller and final **filtration with SABIANA Crystall electrostatic filters**.

Air Handling Units

with Crystall Electrostatic Filters for Air Quality and Energy Savings

Electrostatic filtration is currently considered one of the most advanced systems for capturing particles in an air stream, capable of ensuring high and lasting efficiency and with major benefits in terms of quality-price ratio, considering their longer life compared to any other type of filter.

Cost analysis should also take into consideration the very low pressure drop rate and reduced running costs, **thanks to the simple washing** of the filters with water and detergent.

Their high filtration efficiency combines with considerable bacterial disinfection and viral inactivation, bringing the treated air to the highest quality levels defined by the relevant standards.

The operating principle of these filters is based on applying a high potential difference between discharge and collecting electrodes, so as to create a strong electric field that reaches maximum intensity near the discharge electrodes.

The air around the surface of the discharge electrodes, which contains particle pollution, is thus ionised.
The resulting effect is called a **corona discharge**, as the ions tend to move from the corona or ring around the discharge electrodes towards the collecting electrodes.

During such movement, the ions generated collide with the particles of pollution suspended in the air, which become positively charged (each particle can be charged by many differentions, reaching very high electric charges).
The positively charged particles (+) are then drawn towards the collecting electrodes (-), where they are captured.

SABIANA Crystall electrostatic filter FEMEC (patented)

In designing and developing the **SABIANA Crystall modular electrostatic filter ("FEMEC")**, all the positive features of classic plate electrostatic precipitators have been retained. This new solution features two separate and distinct sections, each with different construction technology and with its own specific purpose.

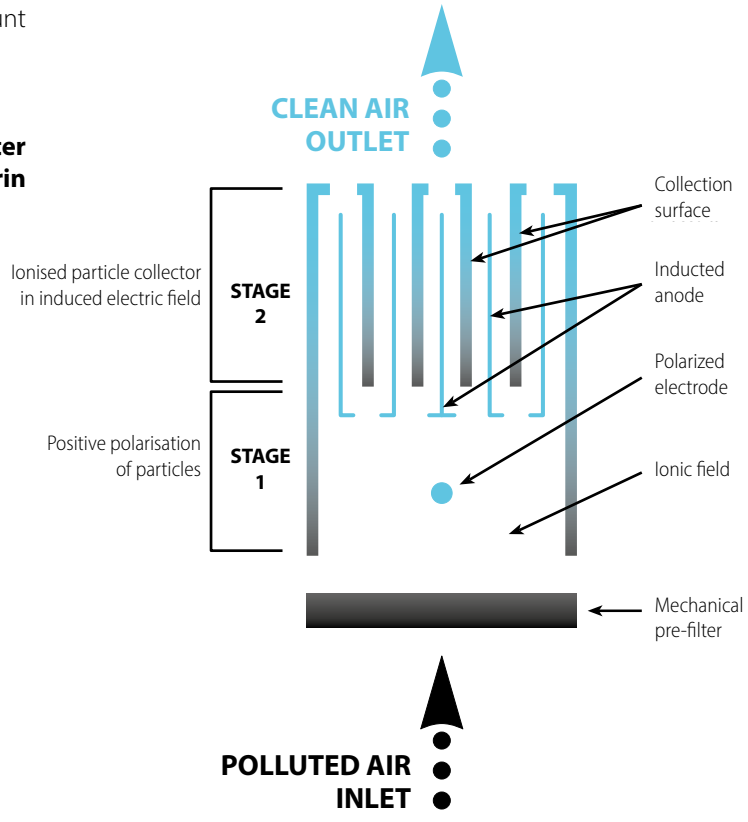
The first section consists of electrodes and insulating parts, called the **"active element section"**, while the second, subject to "loading" and consequently frequent handling for cleaning, is called the **"passive element section"**.
The active components in the first section are secured to the holding structure, containing the actual filter that, not requiring regular maintenance and therefore handling, can be built to guarantee reliability and safety at low cost, as it does not contain special, delicate and expensive materials (insulators etc.).

The second section with passive elements (collector) is made from aluminium plates and is designed to be built in various different sizes, so as to satisfy a wide variety of needs in terms of construction and overall dimensions.
This second section is in turn divided into two parts, a grounded passive part designed to capture the dirt, and another active part, being subjected to the voltage induced by the polarising electrode.

This (patented) system allows electric fields to be created on the opposing surfaces without requiring additional power supplies, and also makes each part of the collector independent from the others, meaning short accidental circuits in one section do not affect operation of the filter as a whole.

All electrostatic filters/active electronic plate filters have the advantage of producing a limited amount of ozone.

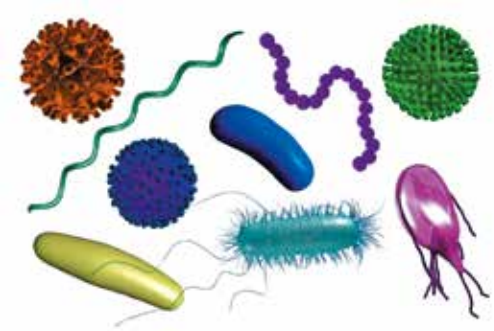
The SABIANA Crystall electrostatic filter is rated as class B-PE, certified by Turin Polytechnic Energy Department.



Electrostatic filters have considerable germicidal potential due to their ionising action and the consequent production of small amounts of ozone that, combined with UV radiation, stop the proliferation of biological substances and contaminants on the surfaces of the passing dust, oxidising and inactivating them.

It worth stressing the **inactivation** of these trapped pollutants by the system, as the same cannot be guaranteed by normal mechanical filtering, even high efficiency filters, meaning these latter systems accumulate live contaminants that form colonies and require the personnel performing maintenance and replacing the filters to adopt special precautions for their own protection and to protect the surrounding environment.

The following tables list the main pathogens, such as: viruses, pollen, mites and fungi, indicating the diseases and harm these can cause to the organism, their origin, shape and average diameter in microns.



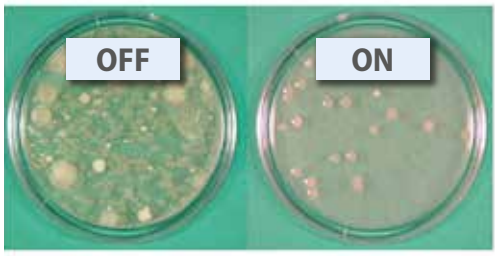
Based on their dimensions, in fact, it can be easily seen that **all pollen, mites and fungi listed in the tables can be captured, inactivated and trapped by electrostatic filters**, in relation to their efficiency.

Cocerning **viruses** even though these are very small in size, they can still be intercepted, trapped and **rendered inactive**, as they are always connected to and carried by larger particles.

One important experiment, until now the only one of its type conducted, was commissioned by Sabiana and carried out by the University of Ancona, Department of Physics and Materials Engineering and Territory, for the purpose of evaluating the bactericidal action of our **electrostatic filter** on biological pollutants.

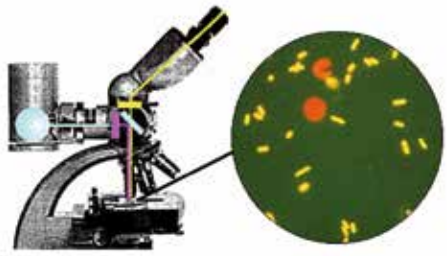
A detailed description of the experiment and related certification are available upon request, however the results can be summarised as follows:

1) Electrostatic filter efficiency in removing bacteria



The figure shows **Rodac** plates with specific culture media following exposure to the air delivered into the environment by the ventilation system being tested.

On the right is the culture plate with the **electrostatic filter** operating, on the left the plate when the system is off.



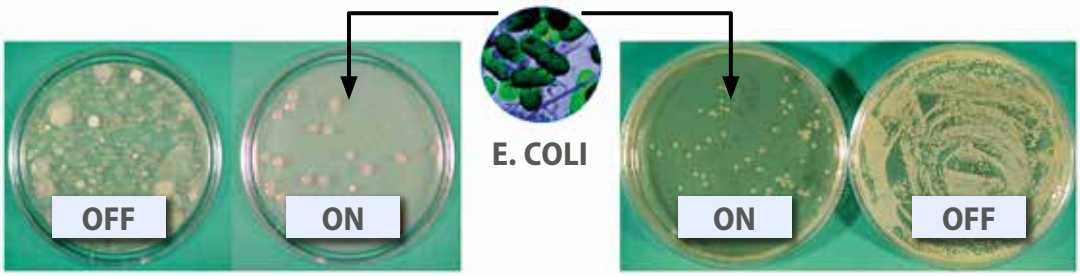
Microscope measurement showed **85% efficiency in bacteria removal** (EPI, Acridine Orange).

2) Electrostatic filter effect on bacterial vitality

LIVE / DEAD = 2.7 **LIVE / DEAD = 1.4**

(EPI, propidium iodide-Sybr green I)

3) Electrostatic filter effect on bacterial growth



in air **on surface**

Confirming the importance of this topic, we can quote for example the **"Lombardy Region Local Hygiene Regulations"**, published in the official Regional Bulletin on 25/10/89 (also taken on by other Regions and Municipalities), specifically paragraph **3.4.47 = Air-conditioning: system features** where, in point **c)**, the text reads:

Air purity must be guaranteed by applying suitable measures (filtration and disinfection where necessary) aimed at ensuring that the air inside the environment does not contain particles exceeding 50 microns in size and there is no possibility of infectious diseases being transmitted via the air-conditioning system.

Air Handling Units with Crystall | MODULAR SIZING

The **SABIANA Crystall electrostatic filter** features the same modularity in terms of sizing as mechanical filters, and consequently the latter can be used both as pre-filters (G1-4) and as post-filters (absolute H10-14).

On the first 14 sizes of the air handling units, the electrostatic filters can be **removed from the side** on slides, with maximum side dimensions of 600 mm, while on the next 9 sizes they can be **removed from the front**, on the air supply side.

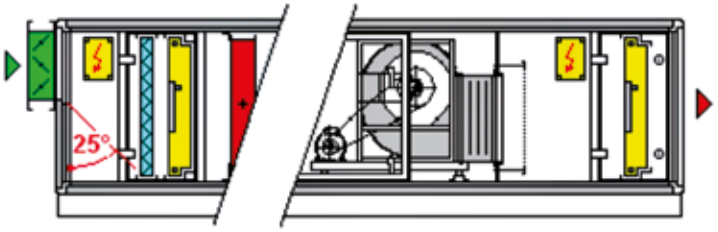


Diagram of the electrostatic filter with removal from the side, placed upstream and downstream of the fan.

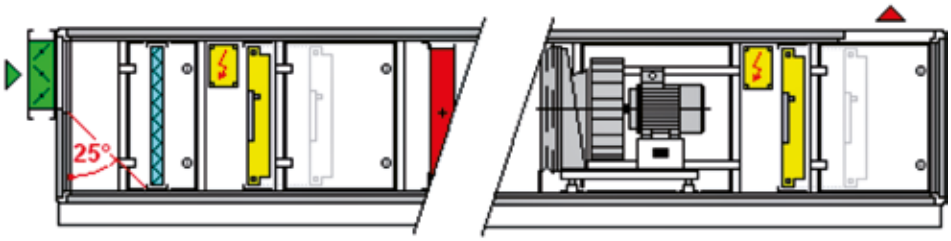
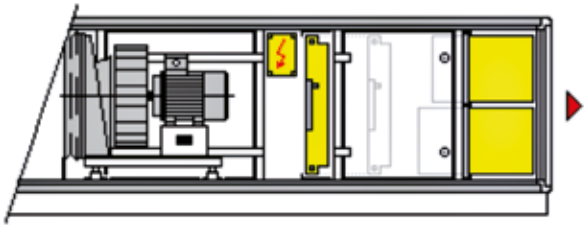
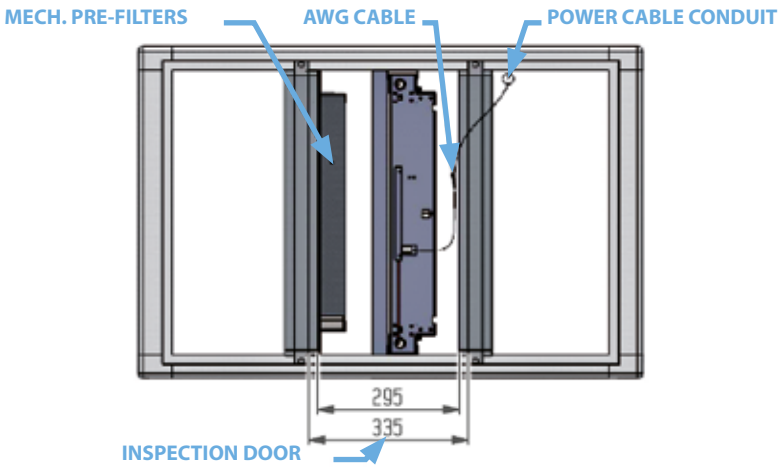


Diagram of the electrostatic filter with removal from the front, placed upstream and downstream of the fan.



Electrostatic filter and absolute post-filter removable from the front, through the inspection door.



Space occupied by the electrostatic filter with mechanical pre-filter and removal from the side.

Air handling always requires high amounts of energy, mainly due to the pressure drop of the distribution ducts and the filters. While for the ducting it is hard to imagine where considerable improvements can be made in the short term, as regards filters, on the other hand, energy consumption can be reduced quite significantly.

Staying within the scope of this report, which only concerns filtration, it can be seen how pressure drop is directly proportional to the efficiency of the filters installed, efficiency that depends on desired indoor air quality required and the quality of the incoming outside air, as well as naturally on how loaded the filters are.
It should be remembered that indoor air quality standards are becoming stricter all the time, while outside air quality is at alarming levels in terms of dust and harmful gas concentrations, especially in highly urbanised and industrial areas.

Consequently, there are two seemingly irreconcilable needs: the demand for better filtration combined with the need to minimise system energy consumption.
As we have seen previously, electrostatic filters represent a very good first response to reconciling these two needs, as they feature high efficiency and very low pressure drop, the latter remaining stable over filter operating life.

During operation the increased pressure drop of mechanical filters causes an increase in power consumption by fan motors, needed to ensure design air flow, or alternatively a progressive reduction in air flow when the system does not feature any form of automatic compensation.

In electrostatic filters, the particulate in suspension is carried by the air stream until binding to the collector plates set out in the same direction as air flow; in this way, by ensuring suitable spacing between plates, even large particle deposits provide little resistance to the air stream, meaning very low pressure drop.

Thanks to this property, electrostatic filters feature a virtually constant pressure drop throughout their normal operating life, which ends when the thickness of the deposits begins to affect the electric field, rather than prevent the flow of air as occurs in mechanical filters.

Energy consumption can be calculated using the following expression: $\mathbf{E = \frac{Q \times P}{1000}}$

Where:

E = energy consumption in kW per hour
Q = air flow in m^3/s
P = average pressure drop in Pa

To determine the difference in energy consumption in percentage terms between mechanical filters and electrostatic filters, a module made up of two standard rigid bag filters can be used as a reference, with design dimensions of **600 x 1200 x 300 mm**, compared against an electrostatic filter cell measuring **600 x 1200 x 100 mm**, with air flow at three reference frontal velocities, **2, 2.5 and 3 m/s**, pressure drop values based on the difference between initial, at the various air flows, and final pressure of 300 Pa defined by legislation

For each different efficiency, energy consumption will be as follows:

Mechanical filters

Frontal velocity	Air flow	Energy consumption in Watt/h for filter class		
m/s	m^3/s	F7	F8	F9
3	2,16	432	448	464
2,5	1,80	338	350	364
2	1,44	258	266	274

Sabiana "Crystall" electrostatic filters

Frontal velocity	Air flow	Energy consumption in Watt/h
m/s	m^3/s	
3	2,16	90,8 + 36 **(*)** = 126,8
2,5	1,80	54,0 + 36 **(*)** = 90,0
2	1,44	28,8 + 36 **(*)** = 64,8

(*) = Filter electronic control device power consumption = 0.5 watt x dm^2 of frontal surface

Comparing the above results, it can be concluded that "electrostatic filters" **consume much less power** than mechanical filters, as shown below in percentage terms:

Frontal velocity	Compared to filter class		
m/s	F7	F8	F9
3	-70,6%	-71,7%	-72,7%
2,5	-73,4%	-74,3%	-75,3%
2	-74,9%	-75,6%	-76,3%

Conclusions

Electrostatic filters certainly ensure high **real system efficiency** with considerable energy savings; in addition, as the difference in pressure drop between clean filter and loaded filter is virtually negligible, no special devices are required to compensate for pressure drop so as to maintain variation in air flow within the allowed limits, thus simplifying both system installation and management.

The economic comparison must also consider this feature and there will always be lower fan power consumption compared to mechanical filters as these have to be rated at the maximum pressure drop allowed, which is simulated, when the filters are clean, by the automatic compensation control.

The following table summarised the concepts described above, comparing each aspect for different filtration systems, and specifically highlighting the difference in initial efficiency for clean filters:

Type	Filter with mechanical media			Electrostatic filter	Clean outside air
Standard	EN 779			UNI 11254	EN 13779
Class	F7	F8	F9	Classe D / B	ODA1
Average efficiency (%)	80/90	90/95	>95	87/97,6	–
Initial efficiency (%)	>35	>55	>70	>80/>95	–
Final pressure drop	450 Pa			4/17 Pa	–
Pressure drop for replacement	300 Pa			Not significant	–
Regenerable	Not possible			Fully	–
Disposal	Special waste			No disposal	–
Maintenance costs	Replacement and disposal			Washing	Adequate filtration
Total bacterial charge risk	High			Very limited (Biocidal action)	According to quality

The above table highlights the advantages, from a maintenance point of view, of using **"Crystall electrostatic filters"** compared to normal mechanical filters, which can be summarised as follows:

- **Electrostatic filters**, being made from aluminium plates, do not require replacement, rather they can simply be washed and repositioned in the special compartment, an operation that can even be carried out by non-specialist personnel.
- This is a significant advantage, as mechanical filters, being classified as special waste, require costly disposal procedures that must be carried out by specialist personnel, using special protection equipment to protect both themselves personally and the surrounding environment. With **electrostatic filters**, maintenance is safe as the bacterial charge on the filter is inactivated by the electrostatic field generated.
- Even G2 metallic pre-filters, rated to trap coarse dust, can be regenerated by simple washing.

As an example, a table is shown below comparing annual power consumption between different types of filters, based on two hypothetical extremes of operating time:
- 12 hours/day for 210 days/year (e.g. offices)
- 24 hours/day for 365 days/year (e.g. hospitals)

Energy consumption

Ref.: rigid bag filter module 600 x 1200 x 300 mm
electrostatic filter module, nom. dim. 600 x 1200 x 100 mm

Frontal velocity m/s	Air flow m^3/s	Filter type and classification	Operation 12 hours a day 210 days/year kW/h	Operation 24 hours a day 365 days/year kW/h
3	**2,16**	F7 mechanical filter	1088,64	3784,32
		F8 mechanical filter	1128,96	3924,48
		F9 mechanical filter	1169,28	4064,64
		B.PE electrostatic filter	**319,54**	**1110,77**
2,5	**1,80**	F7 mechanical filter	851,76	2960,88
		F8 mechanical filter	882,00	3066,00
		F9 mechanical filter	917,28	3188,64
		B.PE electrostatic filter	**226,80**	**788,40**
2	**1,44**	F7 mechanical filter	650,16	2260,08
		F8 mechanical filter	370,32	2330,16
		F9 mechanical filter	690,48	2400,24
		B.PE electrostatic filter	**163,29**	**567,65**

Neptun

Air handling units for swimming pools and SPA

The Neptun air handling units are specifically designed to dehumidificate and assure a correct confort level inside the indoor swimming pools.

The study and engineering of the Neptun units led to: high attention to details, high quality components, internal protection against chlorine aggression, a specified regulation for swimming pools application and always provided with the unit; these features make these air handling units ideal for the indoor swimming pools in every application: from private villas to SPAs, from rehabilitation pools to the swimming ones.

Both the recovery unit and the whole Neptun air handling unit are Eurovent certified.

EUROVENT CERTIFIED PERFORMANCE
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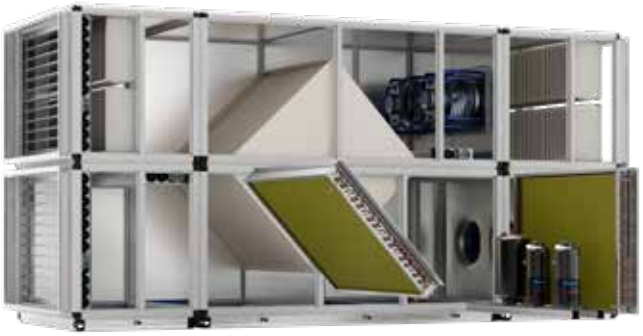
The Neptun units are made of an aluminium frame and 45 mm panels with insulation of mineral wood with density of 100 kg/m^3, internal anti-corrosion protection, glass microfiber filters and frame of polypropylene, in addition to:

Recovery unit made of polypropylene, designed on purpose in order to resist to aggressive chemicals and for hygienic systems.

Plug fans with IE5 efficiency, highly efficient and with integrated speed regulation.



Heat pump, where provided, with compressor based on inverter technology (for power supplies higher than 2 kW) evaporator coil and condenser coil made of lamellar aluminium panels with epoxy protection and drawn copper tubes. The solution with heat pump assures an elevated energy saving.

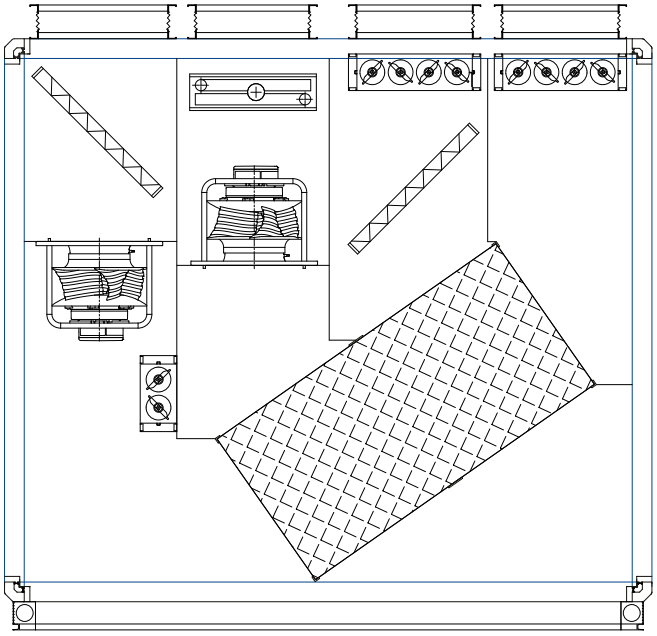
All the units in every configuration are completely regulated, equipped with a touch user terminal that allows an easy setup of the control parameters and they let the access from a distance via cloud, perfect to view and modify the unit parameters from a distance.

Moreover, additional condenser coils are provided as accessories in order to pre-heat the water of the swimming pool and the sanitary one.

Neptun V and Neptun-V HP compact vertical units

The **Neptun-V** units, thanks to their compact configuration, allow to be installed in technical rooms where the unit dimension is decisive, as it happens for example in case of recovery of existing locals for the construction of a SPA area or of a rehabilitation swimming pool.
The recovery section with double cross-flow plate heat exchanger allows to have an efficient unit despite the reduced dimensions.
The **Neptun-V HP** units are equipped inside with a heat pump for the thermodynamic recovery, that leads to a further dehumidification of the recirculated air and pre-heats the air supplied towards the swimming pool room.

Neptun-V



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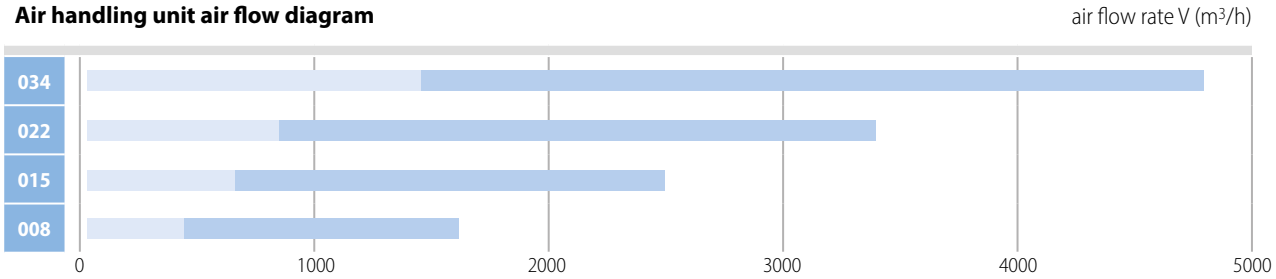
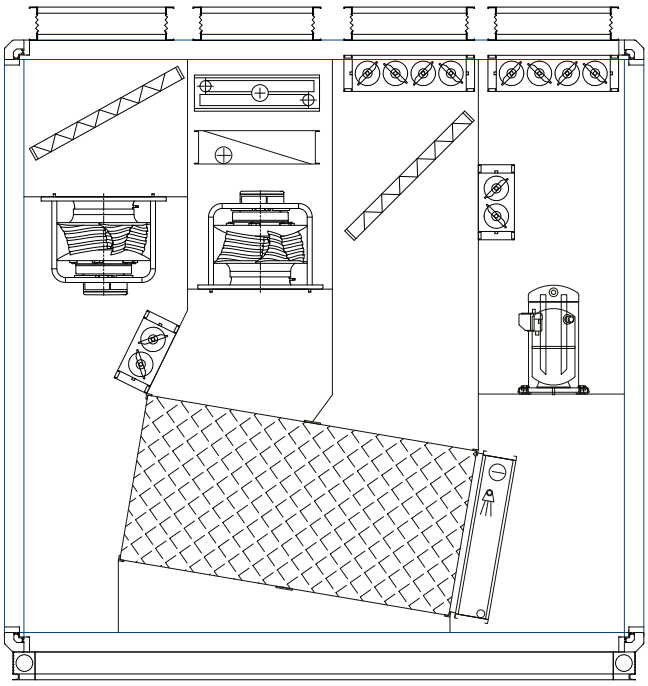
Air handling unit air flow diagram



Unit type	Min	Nom	Max
	m³/h	m³/h	m³/h
008	450	800	1600
015	650	1500	2500
022	850	2200	3400
034	1450	3400	4800

Neptun-V HP



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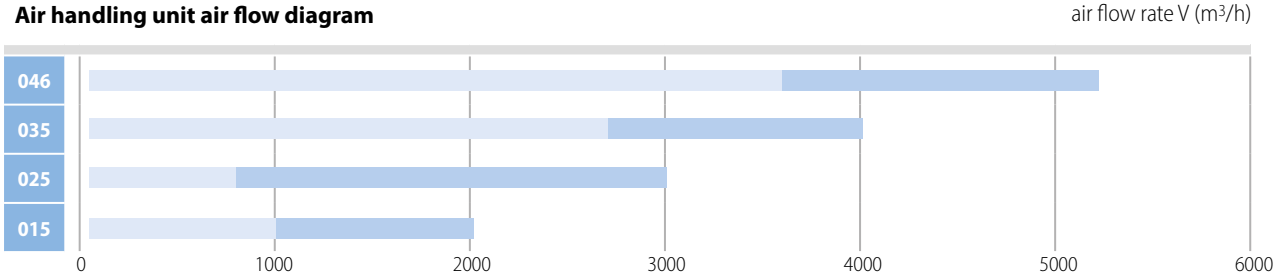
Air handling unit air flow diagram

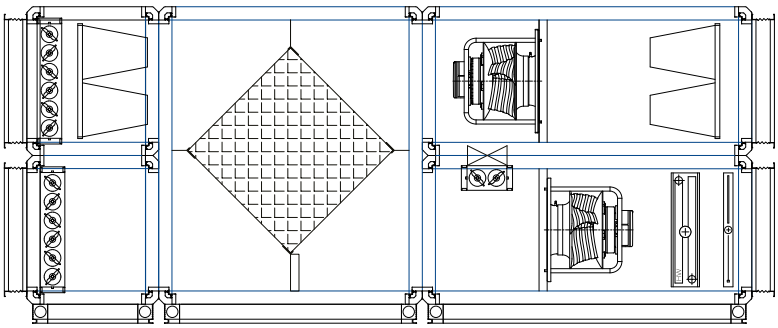


Unit type	Min	Nom	Max
	m³/h	m³/h	m³/h
015	1000	1500	2000
025	1800	2500	3000
035	2700	3500	4000
046	3600	4600	5200

Neptun and Neptun HP units

The **Neptun** units allow to manage higher air flow rates and to have better performances in terms of air dehumidification. They are ideal to be integrated in swimming pool systems with larger surface and wider rooms.
The recovery section with cross-flow plate allows to assure high recovery efficiency thanks to the reduced transit speeds.
The **Neptun HP** units are equipped inside with a heat pump for the thermodynamic recovery, that leads to a further dehumidification of the recirculated air and pre-heats the air supplied towards the swimming pool room.

Neptun



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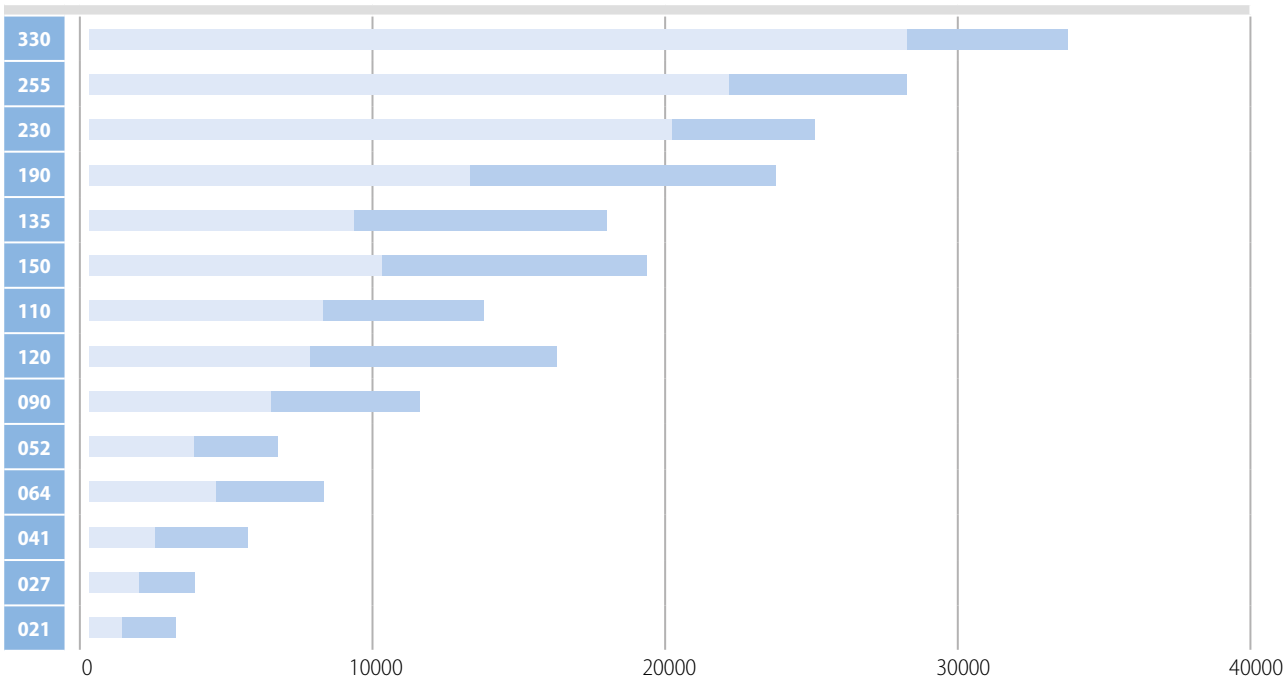
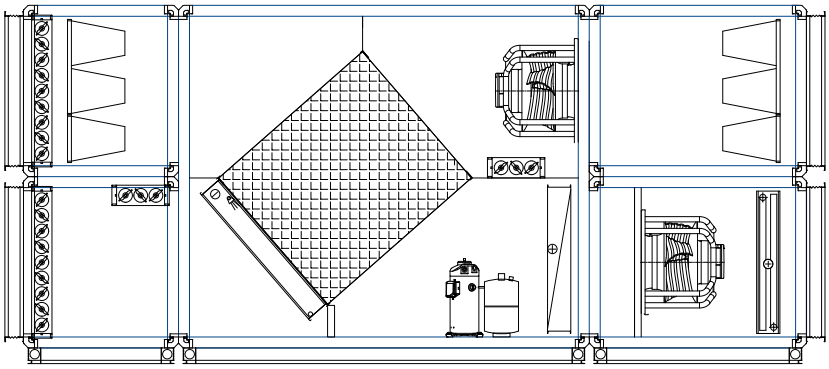
Air handling unit air flow diagram



Unit type	Min	Nom	Max
	m³/h	m³/h	m³/h
021	1200	2100	3000
027	1800	2700	3700
041	2300	4100	5600
064	4400	6400	8000
052	3800	5200	6600
090	6400	9000	11200
120	7600	12000	16000

Unit type	Min	Nom	Max
	m³/h	m³/h	m³/h
110	8000	11000	13500
150	10000	15000	19000
135	9000	13500	17600
190	13000	19000	23400
230	20000	23000	25000
255	22000	25500	28000
330	28000	33000	33500

Neptun HP



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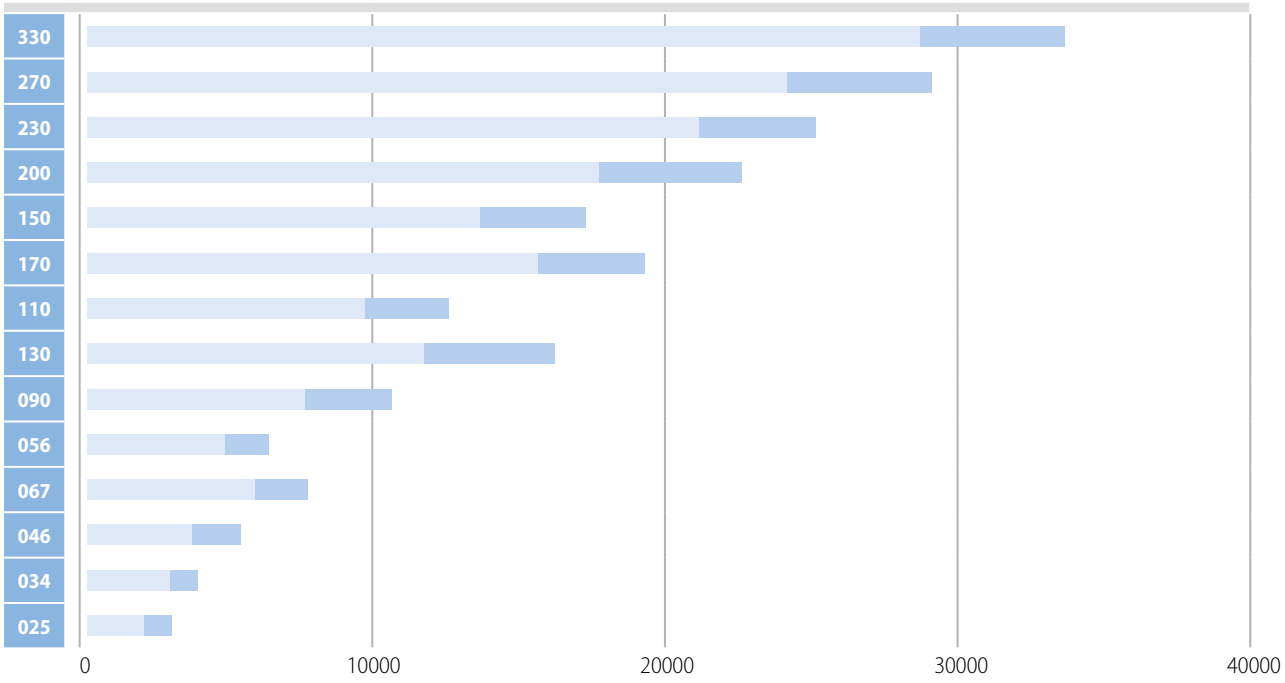
Air handling unit air flow diagram



Unit type	Min	Nom	Max
	m³/h	m³/h	m³/h
025	2000	2500	3000
034	2800	3400	3800
046	3600	4600	5200
067	5900	6700	7500
056	4800	5600	6200
090	7500	9000	10500
130	11500	13000	16000

Unit type	Min	Nom	Max
	m³/h	m³/h	m³/h
110	9500	11000	12500
170	15500	17000	19000
150	13500	15000	17000
200	17500	20000	22500
230	21000	23000	25000
270	24000	27000	29000
330	28500	33000	33500

Cool Breeze

Evaporative cooler

The new innovative evaporative coolers, with automatic control of all functions, are available in three models: D225, D500, S240.

Sabiana's Cool Breeze cooler uses the natural principle of water evaporation to lower the air temperature, just as a sea breeze provides cool relief on a hot day at the beach.

External warm air is pulled through the water-wet pads, reducing its temperature, and is then immediately blown into the building via the fan and air diffuser.

This evaporation process also has the advantage of filtering out dust (>10 micron) and pollen in the air, not only fresh air but cleaner air.

Evaporative cooling provides a continuous flow of new, fresh air; the warm air in the building is expelled and never recirculated.

Industries, shops, sports facilities and in general premises with large volumes can find in this product the solution for the hot periods of the year, the given drop in temperature combined with air ventilation given by the large air changes supplied result in an excellent comfort level in the building.

It's a completely natural cooling method!

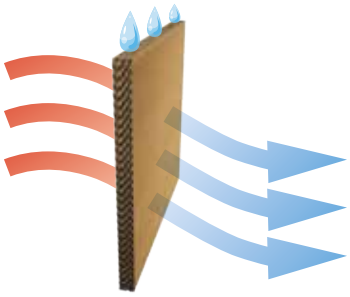
Mod. D225
11.000 m³/h

Mod. D500
21.000 m³/h

Mod. S240
10.500 m³/h

Function

The Cool Breeze evaporative cooler lowers the temperature in the building by accumulating multiple principles of air conditioning: temperature reduction, elimination of accumulated heat, constant ventilation.



Temperature reduction

Hot external air is passed through the water-saturated cooling pads, the air in contact with the water triggers the water evaporation process which automatically decreases the air temperature, the resulting fresh air is introduced in the building by the fan in the cooler.
The cooling effect obtained depends on the efficiency of the cooling pads, the number of air changes supplied, the temperature and humidity of the external air in that moment.

Elimination of accumulated heat

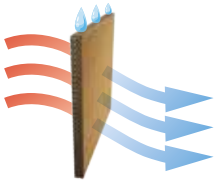
During the summer season heat continues to accumulate in the building due to both the sun's radiation and the activity that takes place inside (machinery, work, etc...).
The Cool Breeze cooler constantly introduces new air into the building and expels the accumulated warm air outside, this results in supplying large air changes in the premises allowing to decrease the temperature by replacing exhausted air with new air.
It is able to reduce the thermal load that accumulates in the building during the summer season.

Constant ventilation

The movement of air over the body creates a feeling of coolness, the typical feeling you get on a hot day by turning on a fan that blows directly at us, the feeling is that the air is cooler even if its temperature has not really changed.
By supplying many air changes, the Cool Breeze evaporative cooler creates a constant air movement in the building which gives an additional feeling of temperature decrease.

Cool Breeze | CHARACTERISTICS

Plastic structure
Cool Breeze is designed with UV-resistant ABS plastics and tested in the driest climates to ensure optimum durability in both function and aesthetics.



Cooling pads
The cooling pads used are made of cellulose with a thickness of 100 mm, the honeycomb shape optimises the maximum contact of the water with the cooling pad allowing to reach saturation efficiencies above 90%.
Cool Breeze cooling pads do not use formaldehyde in the production process so they do not produce an unpleasant smell during the first few weeks of use.

Motor
The fan is rub by a high efficiency 1 kW motor (two motors for the D500 model), does not use belts and pulleys and no maintenance is required.
It can also run in reverse for the air extraction function.

Tangential fan
High efficiency fan with low noise thanks to the unique dimple design (like a golf ball); this feature increases the air flow produced and reduces the sound impact of the fan.

Electronic board
All the functions and safety measures of the product are managed by the electronic board inside the machine.
Automatic water management, washing cycle and water discharge.

Water inlet valve
Solenoid valve for loading water into the cooler sump, equipped with removable and cleanable filter.

Magnetic level sensor
A magnetic level sensor is used to manage the water level in the sump, this allows to not have to carry out maintenance on this component and to have a high reliability over time.

Recirculation pump
It manages the distribution of water on the cooling pads by recirculating it from the cooler sump. It is a high durability professional pump.

Counterweight drain valve
Special gravity operation without the use of electronics, this guarantees a long life and that in no situation the water in the sump remains stagnant.

Remote control included
The wall-mounted control panel manages the cooler's functions in automatic mode (ventilation, cooling and air extraction), fan speed, wash cycles and indoor temperature.
The functions can also be used in manual mode.

BMS
On request it is possible to control the evaporative coolers with a networked system via software from PC, tablet and smartphone.

TECHNICAL SPECIFICATIONS

Models		UDM	D255	D500	S240
Motor	Tension	V	220-240		
	Consumption	W	1000	2000	1000
	Tension	A	6	12	6
	Speed	RPM	850-1370		
Air flow at 20 Pa		m^3/h	11000	21000	10500
Ventilation (*)		m^3/h	19500	36000	18500
Cooled volume		m^3	612	1200	576
Product dimensions		mm	1.130 x 1.130 x 970	1.630 x 1.200 x 995	1.130 x 1.130 x 1.320
Pad dimensions (no. x l x h)		mm	4 x 830 x 770	2 x 928 x 960 4 x 645 x 960	3 x 950 x 830
Pad surface		m^2	2,6	4,3	2,4
Pad air speed		m/s	1,2	1,4	1,2
Water consumption (**)		l/h	34	58	32
Sound power (***)		dBA	65	83	66
Operational weight		kg	80	148	103
No. of fans		No.	1	2	1
Air outlet			lower	lower	lateral

(*) calculated according to non-EU standards
(**) at an outside temperature of 32 °C and a relative humidity of 40 %
(***) measured at 1 m distance

SkySafe
Air purifier

Air purifier equipped with Crystall 50 certified and patented electrostatic filter.

The filtration efficiency on inorganic microscopic particles such as fine particles PM10, PM2.5 and PM1, and organic particles such as bacteria, fungi, moulds, viruses, up to 0.1 µm diameter, is certified by an independent laboratory according to the international standard EN ISO 16890, with filtration efficiencies up to 96% with reference to 0.1 µm particles (MPPS).

The SkySafe air purifier can be applied wherever it is not possible to operate on the previous installations, in order to improve the indoor air quality and reduce the pathogenic substances. The Sabiana SkySafe air purifier can be installed exposed, with the ABS casing, or in false ceilings.

It finds its simple and ideal application in offices, shops, beauty centres, schools, exhibition areas: in fact, it is sufficient to power the unit electrically, the absorption is limited to a few Watts.
A simple wall control allows switching on and off, with the possibility of manually varying the three operating speeds.

Air diffuser: Air intake grid, frame and adjustable air distribution louvers on each side made from ABS, RAL 9003, HTA version. MD-600 version metal diffuser, painted in RAL 9003 white colour, with 600 x 600 dimension, to perfectly fit into the false ceiling standard modules without over-lapping parts.

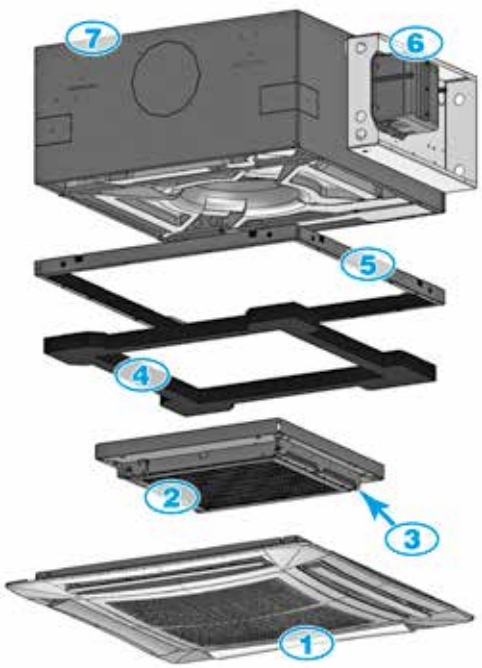
Casing: It is made of galvanized steel with internal thermal insulation with polyolefin (PO) foam (B-s2-d0 EN 13501-1) and external anti-condensate lining.

Control panel: Made of an external box with the electronic regulation board with easily accessible clamps.

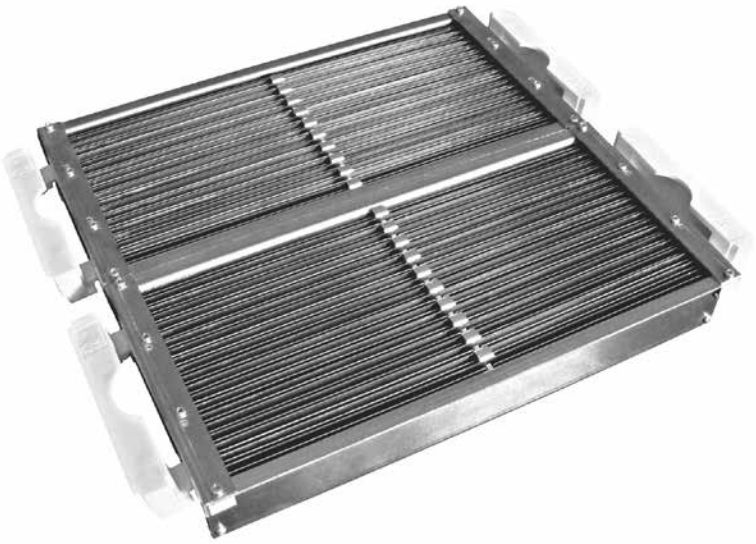
Fan assembly: The fan assembly, which is mounted on anti-vibrating supports, is extremely silent. The radial fan has been designed to optimise performance, using wing profile blades with a shape that reduces turbulence, increasing efficiency and reducing noise. The fan is connected to a single phase electric motor with winding features designed to optimize the performances and guarantee low energy consumption. The motor is single phase 230 V / 50 Hz supply, class B insulation and integrated Klixon thermal contact for motor protection. The fan speed variation is managed with an autotransformer at 6 different voltage outputs. The units are supplied with 3 standard speeds connected and it is possible to change them on site if necessary.

Low efficiency pre-filter: Synthetic washable mechanical filter, easily removable.

High efficiency Crystall filter: The Crystall electrostatic filtering system consists of two parts: the first one is a plate type electrostatic active filter and is fitted into the air intake section of the unit, while the second is an electronic control and regulation board, fitted on the structure. All electrical connections are made in the factory: the Cassette SkySafe Sabiana installation with incorporated Crystall electrostatic filter is therefore similar to that of a normal Cassette fan coil unit: the only difference is the installation height according to the filter dimensions (30 mm).



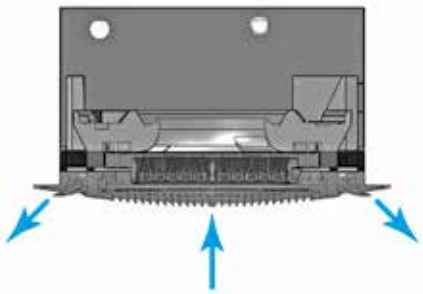
1 Diffuser with return air grid
2 Active plate type electrostatic filter
3 Plastic opening
4 Insulation
5 Filter containment frame
6 Electronic board
7 Cassette SkySafe

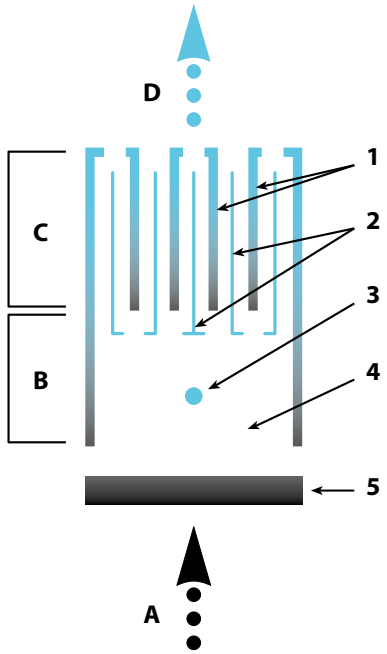


The **Crystall electrostatic filter** is patented and certified according to Standard EN ISO 16890 Class A+ (Eurovent).

Operating principle

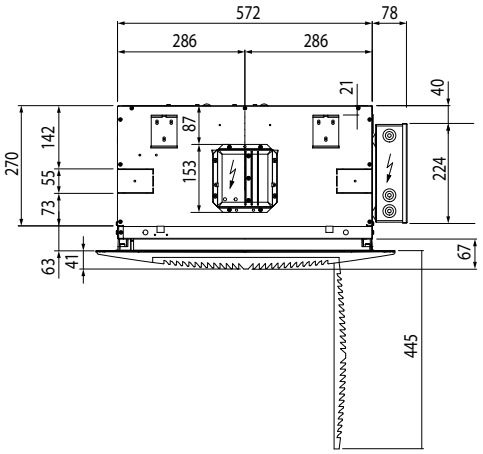
When the polluted air goes through the mechanical pre-filter the particles > 50 µm are eliminated (powder, insects, etc) (A - Fase A).
Then the smallest particles (50 ÷ 0.01 µm) are exposed to an intensive ionizing field and are polarized (B - B Phase).
The charged particles passing through the second filter section, are pushed back by the anode and attracted to the collection surfaces by a strong, induced magnetic field (C - C Phase).
The air which leaves the unit is free from polluting particles (D - Fase D).

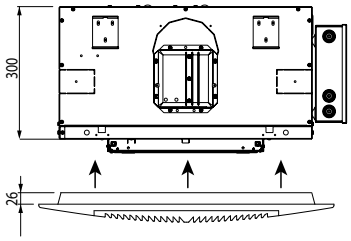


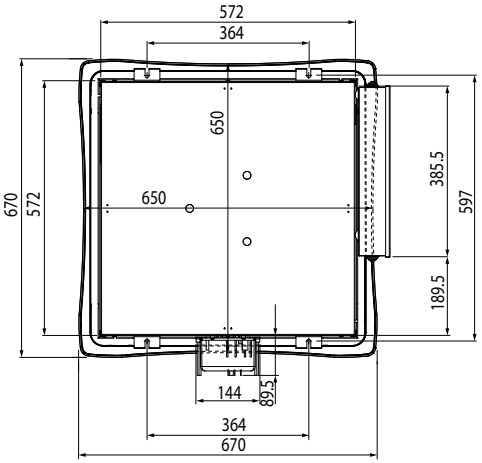


A A Phase - Polluted air inlet
B B Phase - Positive polarization of the particles
C C Phase - Ionized particles inducted electric field collector
D D Phase - Clean air outlet
1 Collection surfaces
2 Inducted anode
3 Polarized electrode
4 Ionic field
5 Mechanical pre-filter

DIMENSION AND WEIGHT



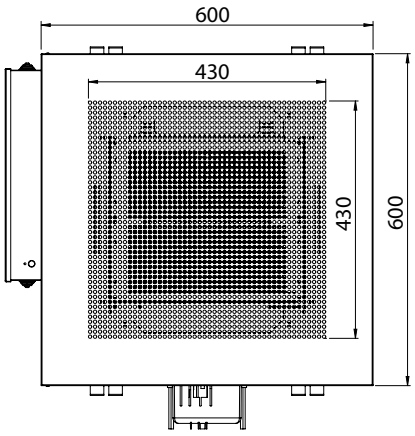


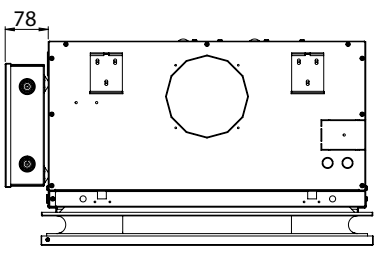


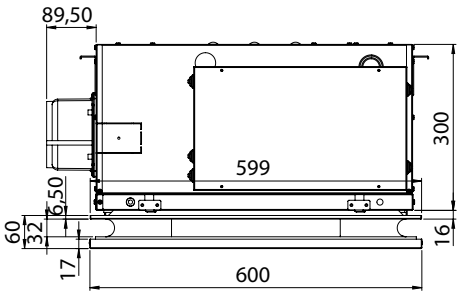
Model		SkySafe
Unit weight	kg	24
Diffuser weight	kg	3

MD-600 version metal diffuser

(not to be used with the MCT SKSF casing)







Cassette SkySafe performances

Model		SkySafe		
Speed		**1**	**2**	**3**
Flow rate	m^3/h	245	400	575
Flow rate	m^3/s	0,068	0,111	0,160
Filter length	mm	356	356	356
Filter depth	mm	292	292	292
Filtering section	m^2	0,104	0,104	0,104
Speed	m/s	0,65	1,07	1,54
MPPS	%	MPPS > 96,99%	82,25% < MPPS < 96,99%	69,71% < MPPS < 85,25%
Efficiency measured on PM1	%	Eff. M. PM1 > 98%	92% < Eff. M. PM1 < 98%	84% < Eff. M. PM1 < 92%
ISO ePM1	%	ISO ePM1 [95%]	ISO ePM1 [90%]	ISO ePM1 [80%]
Efficiency measured on PM2,5	%	Eff. M. PM2,5 > 98%	93% < Eff. M. PM2,5 < 98%	88% < Eff. M. PM2,5 < 93%
ISO ePM2,5	%	ISO ePM2,5 [95%]	ISO ePM2,5 [90%]	ISO ePM2,5 [85%]
Efficiency measured on PM10	%	Eff. M. PM10 > 95%	92% < Eff. M. PM10 < 95%	89% < Eff. M. PM10 < 92%
ISO ePM10	%	ISO ePM10 [95%]	ISO ePM10 [90%]	ISO ePM10 [85%]

Filtering Efficiency **ISO ePM1-2,5-10** certified in compliance with Standard EN ISO 16890:2016

Cassette SkySafe technical data

Model		SkySafe		
Speed		**1**	**2**	**3**
Flow rate	m^3/h	245	400	575
Sound power (Lw)	dB(A)	35	47	55
Sound pressure (Lp) [1)]	dB(A)	26	38	46
Total power absorption	W	37	53	70
Total current absorbed	A	0,17	0,24	0,32

(1) The sound pressure levels are 9 dB (A) lower than the sound power levels, apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

Operating limits

Description		UoM	Value
Ambient air	Maximum temperature	°C	+40
Power supply	Single-phase rated operating voltage	V/Hz	230/50

MCT-SKSF casing

The **MCT-SKSF** version has been designed for all environments where false ceilings are not featured or cannot be constructed.

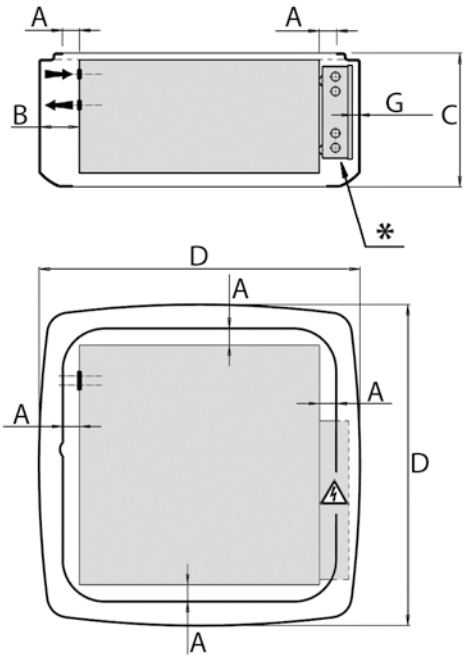
The casing fits perfectly to the air inlet and outlet diffuser, maintaining the appealing design that defines the SkySafe Cassette.

The **MCT-SKSF** version allows an installation height of up to 4 m thanks to the great versatility of adjustment of the air diffusion fins.

All the technical characteristics described in the previous pages still apply, bearing in mind that treatment with primary air is not possible.

The **MCT-SKSF** version features a special casing, in COOL GREY 1C colour, delivered in separate packaging; this must only be fitted after having installed the SkySafe unit and completed the electrical connections.

Dimensions



* = Cables output

Model		MCT-SKSF
A	mm	40
B	mm	93
C	mm	320
D	mm	768
G	mm	15 max
Weight	kg	5

Controls

WM-3V	3 speed switch
SEL2M	Speed switch for WM-3V control

Crystall Duct System CDS.C

Crystall 50 electrostatic filter section for duct installation

Crystall Duct System is a fully **customisable*** innovative filtering system that can be combined with air grids/diffusers, inserted in duct connections through dedicated sections or more simply coupled to ducted terminal units. It is essentially composed of **4 elements**:

a) active electrostatic filtering unit Crystall 50 composed of an ionising frame and filter pad

b) metal frame with customisable casing based on the types of terminals in the system, for full adaptability

c) wired control and power box available fitted on the plenum in the configuration at a distance

d) high voltage silicone cable for the connection between filtering plenum and wired box, when remote configuration is requested.

(*) Sabiana's offices are fully available to assess dedicated developments to customer system engineering needs, maximising the achievable filter efficiency performance (@ EN ISO 16890:2016).

Crystall Duct System air purification systems equipped with Sabiana Crystall active electrostatic filter achieve considerable reduction of particulate in the environment thanks to the high filtering efficiency, performance certified by the standard in force EN ISO 16890:2016. Also note that the WHO (World Health Organisation) has classified PM (Particulate Matter) as a group 1 carcinogen as well as carrier of pathogenic biological substances for humans.

Particulate can be solid or liquid: especially liquid aerosols (droplets), such as those produced through breathing and other anthropomorphic activities, are the main carriers of viruses and bacteria that are pathogenic and in some cases lethal to humans.

It is now recognised by the world scientific community that all biological contaminants such as viruses and bacteria are mainly spread by the aerosol produced in the environment by infected people through breathing, coughing, sneezing or even simply speaking, with greater risk of spread indoors where we normally spend more than 80% of our time.

The most recent recommendations from WHO (Roadmap to improve and ensure good indoor ventilation in the context of COVID-19, March 1st, 2021) require, where possible, increasing the filtering efficiency of the equipment that handles indoor air and especially on air conditioning units in order to remove the smallest potentially infected particles from the air (containing pathogenic agents).

It is therefore suitable for different types of buildings, for example schools, hospitals and care homes, (hallways, waiting rooms, hospital ward rooms), doctor's offices, hotels and everywhere it is necessary to improve the quality of the indoor air.

Advantages of the Crystall Duct System

- Multiple applications thanks to reduced overall dimensions (especially on existing systems)
- No impact on the thermal and aeraulic balance of the system
- Negligible pressure drops (even with dirty filter)
- Proven bactericidal action (sustainable IAQ)
- Simple and economic maintenance (cleaning the header without replacement and disposal expenses)
- Very low electric absorption
- Performance certified according to product standards EN ISO 16890:2016
- Compliant with the standards in force for electromagnetic compatibility and safety (by accredited laboratories)
- Technologically sustainable and patented solution

Tests and Certifications

The Crystall solution has gone through numerous tests and efficiency and efficacy testing to assess its function and performance level in real conditions of use.

At various accredited laboratories, efficiency and pressure drop tests were conducted, according to product standards EN ISO 16890:2016 that is able to classify performance.

Sabiana's Crystall active electrostatic filter, duly sized, is able to guarantee a Most Penetrating Particle Size filtering efficiency level (MPPS - i.e. with an aeraulic diameter between 0.2 and 0.4 µm) equal to semi-absolute filter E11 (MPPS ≥ 95% - E11 @ EN 1822-1).

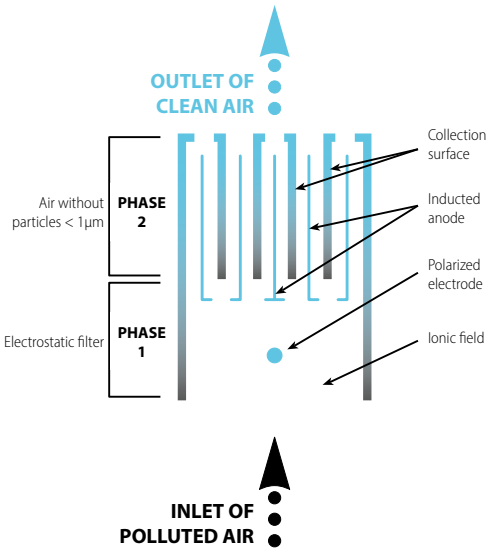
Also, the **University of Ancona** (the online scientific publication "Bacteria Removal and Viability Attenuation by Means of an Electrostatic Barrier" can be consulted by purchasing the Indoor and Built Environment magazine from the website) conducted more than 180 laboratory tests on microbiological substances (total airborne microbiological load), which include bacteria, mould, fungi, etc. and that confirmed, through the statistical processing of the data carried out with the specific Fischer test, the efficacy of the Crystall active electrostatic filter in reducing the bacterial load.

Main components of the Crystall filtering unit

The first element is the Crystall active electrostatic unit with aluminium modular cells which is composed of two separate and distinct sections, one of which is active (polarisation section) attached to the load-bearing structure and the other is passive, with induced anode (collection or header section) that can be removed for maintenance. The first section composed of electrodes and insulating parts does not require maintenance, while the second section, intended for the collection of organic and inorganic particulate, requires periodic cleaning. Its extremely contained depth (just 50 mm) combined with its great dimensional flexibility, make it suitable for satisfying the most diverse construction requirements, that have the aim of obtaining a high filtering level of the recirculation/secondary air (according to the definition provided by standard EN 16798.3). The external metal frame of the polarisation section becomes the main component of the structure, that defines the installation typology and allows a fully customization and total adaptability, above all with pre-existent installations. The second component is the wired control and power box, available "fitted on the unit" or at a distance, that allows the management and the inspection of the Crystall filtering unit operating status.

Femec active electronic plate filter

The Crystall active electrostatic filter is based on the principle of separation of the particles contained in the air through electrical polarisation and their subsequent treatment on counterposed metal surfaces, with opposite polarity. It is built with thin metal blades tapered together, forming numerous and intense electrical fields. The polluting particles that transit there, charged by a special electrode, are attracted and captured, as though by small magnets, on the counterposed surfaces of the blades. The power required for this process is low, approximately 4/7 W for every 1000 m^3/h of handled air. Sabiana's patented Crystall solution makes it possible to achieve electrical fields on opposing surfaces without the need for additional electrical power supply, making every zone of the header (collection section) independent, thereby preventing the accidental short circuit of one section from compromising the operation of the entire filter.



Wired control and power box

The main element is the high voltage electronic power board required to feed the Crystall active electrostatic filter, an on/off disconnecting switch and a LED light to locally monitor the correct operating status; this switch can also be controlled remotely through an SPDT relay contact. The operating power supply is 230 Vac 50/60 Hz.

Silicone cable and high voltage connectors

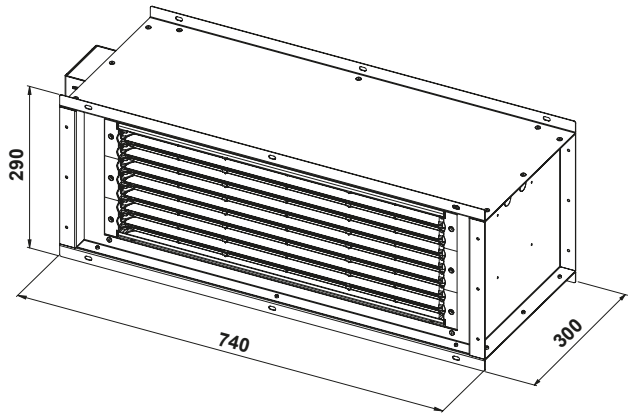
The wired box in the configuration at a distance requires the supply of a special cable with silicone insulation and relative connectors suitable for use with high voltage.

Crystall Duct System CDS.C | CDS-C FILTER

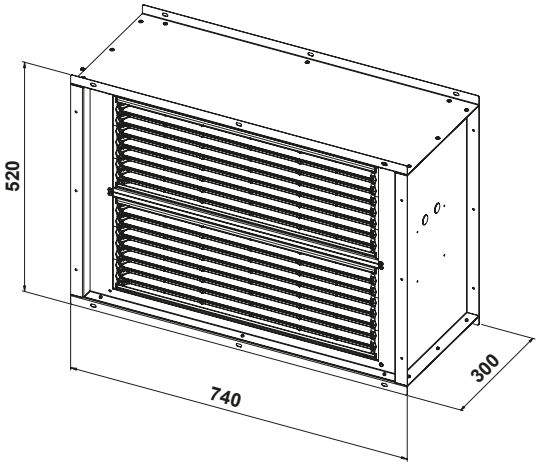
This type of plenum was specifically designed to be inserted on duct connection branches, typically upstream of the distribution terminals for the purification of secondary recirculation air.
The structure is built with galvanised sheet metal, suspended, and is set up for coupling to flanged ducts. Inside it contains the Crystall active electrostatic section composed of one or more filtering units, depending on the selected model.
The inclusion of a hinged inspection door, located at the bottom of the plenum, provides easy access to the structure for all ordinary and extraordinary maintenance operations.
The supply is completed with a wired box that can be positioned either on the plenum (on the right or on the left shoulder as needed) or at a distance, a local LED that signals the operating status (also replicated on the box in in the configuration at a distance) and a safety microswitch located on the inspection door for the purpose of cutting off the power supply prior to access.

Dimensions, weights and characteristics

CDS.C1



CDS.C2



Model	Weight packed unit (kg)	Weight unpacked unit (kg)
CDS.C1	15,5	13,5
CDS.C2	18,5	16,0

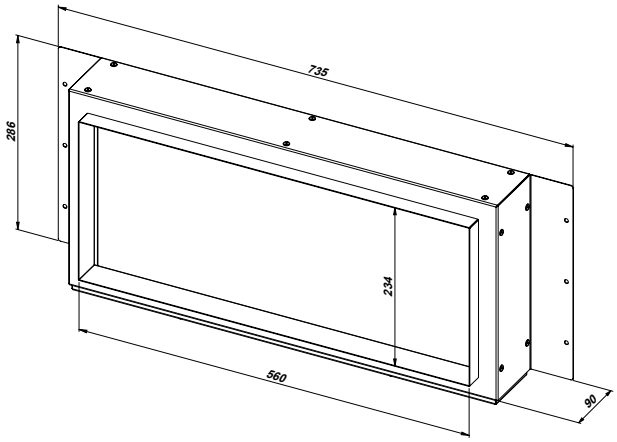
Model	Flow rate (m³/h)	Δ_{pi} Electrostatic filter (Pa)	Δ_{pi} Electrostatic filter + Coarse (Pa)	Efficiency class (**)
CDS.C1	500	1	19	ePM_1 95% - $ePM_{2,5}$ 95% - ePM_{10} 95% - MPPS 96% (E11 @ EN 1822-1)
CDS.C1	650	1	26	ePM_1 90% - $ePM_{2,5}$ 90% - ePM_{10} 90% - MPPS 85% (E10 @ EN 1822-1)
CDS.C1	1000*	2	43	ePM_1 80% - $ePM_{2,5}$ 80% - ePM_{10} 85% - MPPS 63%
CDS.C1	1300	3	59	ePM_1 70% - $ePM_{2,5}$ 75% - ePM_{10} 80% - MPPS 60%
CDS.C2	1000	2	20	ePM_1 95% - $ePM_{2,5}$ 95% - ePM_{10} 95% - MPPS 96% (E11 @ EN 1822-1)
CDS.C2	1300	3	27	ePM_1 90% - $ePM_{2,5}$ 90% - ePM_{10} 90% - MPPS 85% (E10 @ EN 1822-1)
CDS.C2	2000*	5	44	ePM_1 80% - $ePM_{2,5}$ 80% - ePM_{10} 85% - MPPS 63%
CDS.C2	2600	7	62	ePM_1 70% - $ePM_{2,5}$ 75% - ePM_{10} 80% - MPPS 60%

(*) Recommended nominal air flow rate to obtain an ePM_1 high efficiency class
(**) Performing test according the EN ISO 16890:2016

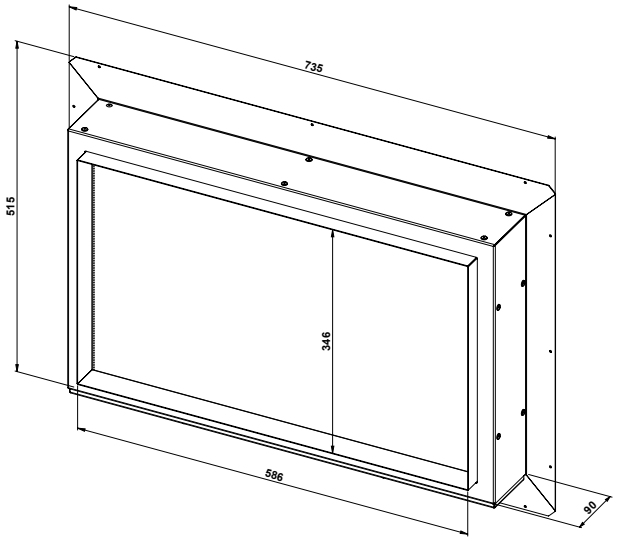
PFG **Coarse filter plenum ISO Coarse 60% (ex G4) for CDS.C1**

Section made of galvanized steel containing a filtering cell with synthetic medium of flame retardant polyester F1 DIN 53438 class, usable as pre-filtration phase and separation of the coarse particles within the fresh air or processed air handling. The combination with the CDS.Cx section occurs by means of flanges provided upstream of this late one. ISO Classification Coarse 60% @ EN ISO 16890 (ex G4 @ EN 779:2012).

PFG1



PFG2



Crystall Round

Electrostatic filter

Crystall Round is an electrostatic product range for the mechanical ventilation in either installation types: residential and tertiary.

The solution is designed for installations within the sector of VMC systems with flow rate untill 600 m^3/h and pre-installed circular spigots (from DN125 to DN180).

The Crystall Round range is equipped with Crystall 50 active electrostatic filtration (Sabiana patent) able to clean the fresh air with high efficiency class (ePM1 95% @ EN ISO 16890:2016) also in the presence of microparticulates with a diameter included between 0,2 - 0,4 micron (called MPPS - Most Penetrating Particle Size) with the same performance levels of a semi-absolute filter of E10 / E11 class. In this way the consumers belonging to the adjacent indoor ambients are provided with fresh and cleaned air during all the operating period of the VMC system.

The electrostatic filters allow a very high air cleaning by stopping and thus removing all the solid and liquid microparticles that can diffuse pathogenic substances dangerous to humans (virus and bacteria included) , that can reach until 0,1 micron of dimension. All this without causing any air side pressure drop or elevated power consumption. Moreover these filters can be easily regenerated (simple collector cleaning) without waste disposals and with low mainteinance costs.

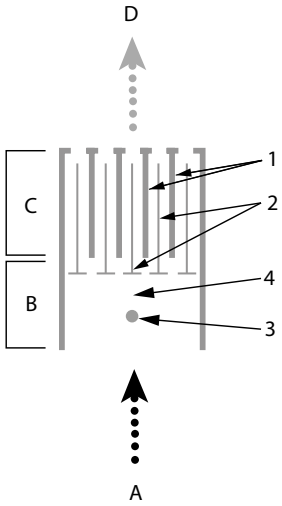
The Crystall Round filters are ultra-flat-shaped, designed for any type of installation within the residential false ceilings with classic standard dimensions, preferably for maintenance rooms where it is possible to install inspection openings. As the filter front panel can be half opened or totally removed, the unit can be mounted near the inner surface of the false ceiling.

For these reasons the Crystall Round can be considered a precious compact component for any residential ventilation system that safeguards very quietly the healty and the aesthetic sense.

OPERATING PRINCIPLE

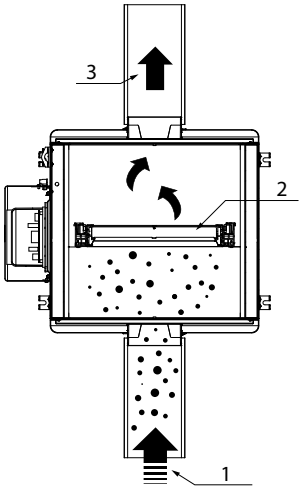
The unit is equipped with an air cleaning system that allows to separate the gas inlet flow from the polluting particles. The particles can be both solid or liquid. The electrostatic filter is single phase 230 V 50 Hz supply.

Filtering pad



A Polluted air inlet
B Phase 1
C Phase 2
D Clean air outlet
1 Collection surface
2 Inducted anode
3 Polarized electrode
4 Ionic field

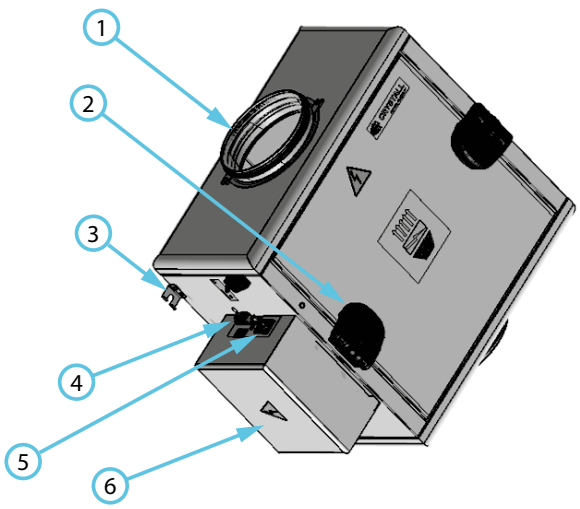
Filter



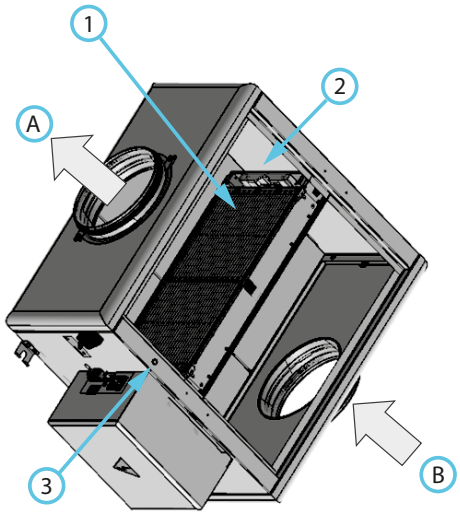
1 External polluted air intake
2 Electrostatic filter
3 Clean air supply

Phase 1
The smallest particles included in the aspirated air are exposed to an intensive ionizing field and are polarized.
Phase 2
The charged particles passing through the second filter section are pushed back by the anode and attracted to the collection surfaces by a strong, induced magnetic field.
The air which leaves the unit is free from polluting particles.

MAIN COMPONENTS



1 Connection spigot with garnish
2 Watertight handles for panel half opening or removal
3 Wall or ceiling brackets
4 Terminal board with contacts (control/alarm)
5 C14 connector
6 Electrical box



A Purified air
B Air to purify
1 Electrostatic filtering pad
2 Handles for the filtering pad removal in the direction of the air flow
3 LED operative status

Valid data for the standard version and for the version with DX installation (CR-200-D - CR-400-D - CR-600-D)

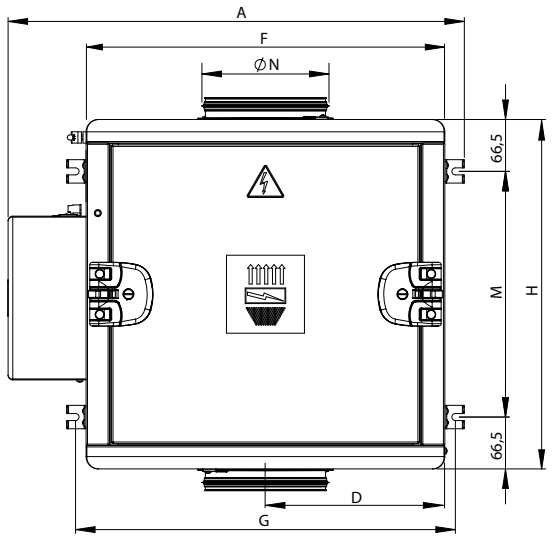
Model		CR- 200	CR- 400	CR- 600
ISO 16890 Filtration Efficiency		90% <= ePM_1 < 95%	80% <= ePM_1 < 90%	80% <= ePM_1 < 90%
Max. flow rate	m^3/h	200	400	600
Power supply	V/Hz	230/50	230/50	230/50
Power absorption	W	12	12	12

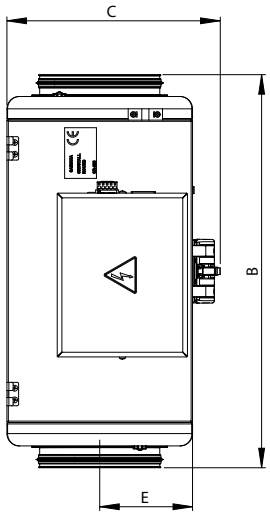
Filter class efficiency according to the EN 16890

Model	Flow rate (m^3/h)	Efficiency class (EN ISO 16890)			MPPS*
CR-200	190	ePM_1 95%	$ePM_{2,5}$ 95%	ePM_{10} 95%	MPPS 96% (E11 @ EN 1822-1)
	240	ePM_1 90%	$ePM_{2,5}$ 90%	ePM_{10} 90%	MPPS 85% (E10 @ EN 1822-1)
CR-400	280	ePM_1 95%	$ePM_{2,5}$ 95%	ePM_{10} 95%	MPPS 96% (E11 @ EN 1822-1)
	370	ePM_1 90%	$ePM_{2,5}$ 90%	ePM_{10} 90%	MPPS 85% (E10 @ EN 1822-1)
	490	ePM_1 80%	$ePM_{2,5}$ 85%	ePM_{10} 85%	MPPS 69%
CR-600	410	ePM_1 95%	$ePM_{2,5}$ 95%	ePM_{10} 95%	MPPS 96% (E11 @ EN 1822-1)
	530	ePM_1 90%	$ePM_{2,5}$ 90%	ePM_{10} 90%	MPPS 85% (E10 @ EN 1822-1)
	710	ePM_1 80%	$ePM_{2,5}$ 85%	ePM_{10} 85%	MPPS 69%

Dimension of the most penetrating particle (Most penetrating particle size)

Dimensions



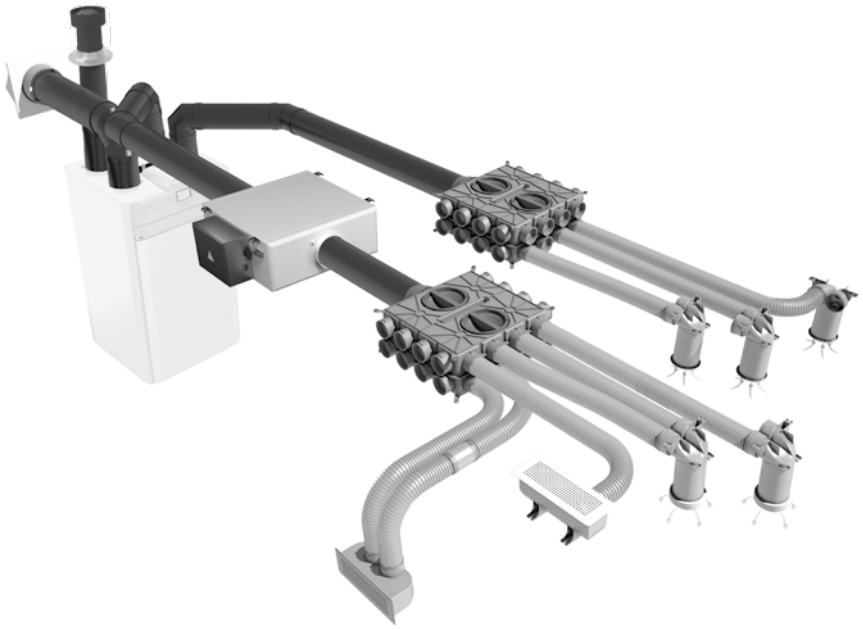


Left version dimension; for the right versions the dimensions are symmetrical.

Model		CR- 200	CR- 400	CR- 600
A	mm	585	585	705
B	mm	504	504	673
C	mm	218	274	292
D	mm	230	230	250
E	mm	91	119	128
F	mm	460	460	580
G	mm	487	487	607
H	mm	448	448	600
M	mm	315	315	467
ØN	"	125	160	180

Combinations with Energy Smart for wall on board installation

Crystall Round units are designed to be applied on the main duct for the fresh air supply distribution, installed downstream of the VMC unit and at a distance from it, between the air inlet grid and the ramification plenum of the plant. Given the flattened shape of the units, the standard application is in a false ceiling, near the previously mentioned plenums. However, there is a possibility of a wall or double-wall application at a distance. In case of application at a distance from the VMC unit, the installation of the Crystall Round unit on the right or on the left depends on the specific need of the installation type.



Combinations with Energy Smart

The typical case for this combination type is the wall installation for Energy Smart (S/SP) units with floor/wall support and on vertical position and for flat Energy Smart units (SHP) is the ceiling/wall installation.

Recommended combination of the Crystall Round version with the Energy Smart S/SP vertical version

Model	Energy Smart Left external air connection	Energy Smart Right external air connection
ENY-S-170	CR200-D*	CR200
ENY-SP-180		
ENY-S-270	CR400-D*	CR400
ENY-SP-280		
ENY-S-360		
ENY-SP-370		
ENY-S-460	CR600-D*	CR600
ENY-SP-460		
ENY-S-600		
ENY-SP-600		

Recommended combination of the Crystall Round version with the Energy Smart SHP horizontal and vertical version

Modello	Energy Smart Left external air connection	Energy Smart Right external air connection
ENY-SHP-130	N/A	CR200*
ENY-SHP-150	N/A	CR200*
ENY-SHP-170**	CR200-D	CR200*

* Standard application without Energy Smart unit electronic board setup changes.
** Crystall Round accessory remote installation is recommended for ENY-SHP-170 unit.

Flues

Since 1985 Sabiana has been selling - and since 1997 manufacturing - stainless steel flues, single or double wall versions, for discharging flue gas from boilers.

Considering the intended use of these flues, the relevant European directive on Construction Products requires **product certification** by a notified body, with annual audits of the design, engineering, manufacturing and storage processes.
Sabiana uses the services of the prestigious and demanding **IMQ Italian Organisation**, which has been checking and testing product quality since the Directive came into force.

Sabiana uses modern electronic instruments to verify the chemical composition of all materials received, thus **totally guaranteeing** that the stainless steel used and declared complies with the required technical specifications.

The production processes are completely automated and allow the use of some of the thickest materials available on the market, **significantly extending product life and resistance to corrosion** by acid flue gas.
A highly advanced selection software can be used to check suitability of the chosen diameter for the type of installation.

Eight product lines, including three in plastic, allow the best choice to be made based on the type of boiler and the flue installation site.

The prestigious Italian Institute IMQ controls and cheks the quality of the stainless steel flues made by Sabiana..

InoxSabiana 25

Stainless Steel Double Wall Flues

The **InoxSabiana 25** series is the result of an innovative constructional design aimed at achieving a high quality product, versatility and ease of assembly.
The choice of the materials, the use of the latest construction techniques, the care paid to every accessory, the conformity with the European EN 1856-1:2009 standard, the continuous checks on the products and the production process, and the quality mark issued by the prestigious **Italian Institute IMQ**, guarantee the absolute reliability of the Sabiana flues.

The inner wall is made from **AISI 316L** stainless steel, 0.5 mm thick, while the outer wall is made from **AISI 304** stainless steel, 0.5 mm thick, or alternatively **copper**, 0.6 mm thick.
The insulation is rock wool, with a minimum density of 90 kg/m³, 25 mm thick.

Longitudinal **microplasma** welding is used on both the inner and outer wall on each element, while the 90° T sections, flue gas monitoring and inspection module are made using the deep drawing process, thus avoiding welding.
All the non-insulated elements are made from AISI 304 stainless steel (aluminium adjustable flashing and storm collar).
In addition, the use of an innovative fastening system means that the thermal bridge between the inner and outer wall is reduced to the minimum.

The InoxSabiana 25 series includes **8 different** inside **diameters (from 100 to 350 mm)** and a complete series of accessories for solving all problems relating to the discharge of the flue gas from heat generators.

- **AISI 316 L stainless steel inner wall**
  (austenitic stainless steel 18/10 with low carbon content, grade UNI X 2, CrNiMo 1712).
  Thickness: 0,5 mm.
  Properties: high resistance to intergranular corrosion and particularly aggressive products.

- **AISI 304 stainless steel outer wall**
  (austenitic stainless steel 18/10, grade UNI X 5, CrNi 1810).
  Thickness: 0,5 mm.
  Properties: good resistance to corrosion in air and water.

  Upon request, copper outer wall is available.

- **Rock wool insulation**
  with basaltic composition, minimum density 90 kg/m^3, thickness 25 mm.
  Properties: the rock wool used is chemically neutral, is not hydrophilic nor hygroscopic, nor has a capillary action.
  It is free of asbestos and crystalline silica, has low conductivity values.
  The rock fibres making up the insulation can withstand temperatures exceeding 1000 °C.
  The insulation is classified as incombustible by the French standard MO-CSTB n°92.34624-3.

- **Longitudinal microplasma welding** on both the inner and outer wall, in each element.

- All the non-insulated elements are made from AISI 304 stainless steel (storm collar and adjustable flashing are made in aluminium). The screws supplied are in stainless steel.

- **Minimum thermal bridge** between the inner and outer pipe, due to the adoption of an innovative fastening system.

- Special design of the inner wall so as to allow free expansion according to the flue gas temperature.

- Insulated individual cardboard packaging for each element.

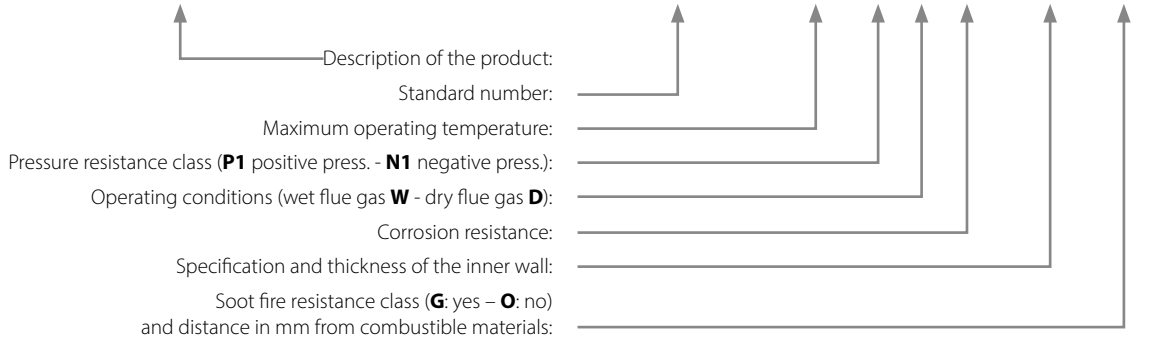
- Wall brackets and supports with adjustable lengths.

Designation of the product according to EN 1856-1:2009 standard

InoxSabiana 25/25R System Chimney with gasket **EN 1856-1:2009 T200 - P1 - W - V2 - L50050 - O ***

InoxSabiana 25/25R System Chimney without gasket **EN 1856-1:2009 T450 - N1 - D - V2 - L50050 - O ****

InoxSabiana 25/25R System Chimney without gasket **EN 1856-1:2009 T450 - N1 - D - V2 - L50050 - G ****



(*) øi 100÷300 mm: **O50** – øi 350 mm: **O75**
(**) øi 100÷300 mm: **O50 / G75** – øi 350 mm: **O75 / G115**

• General characteristics

- Element locking bands.
- Resistance to condensate, even under pressure (provided by certified silicone gasket).
- Possibility to turn each element 360° while maintaining the tightness characteristics unaltered.

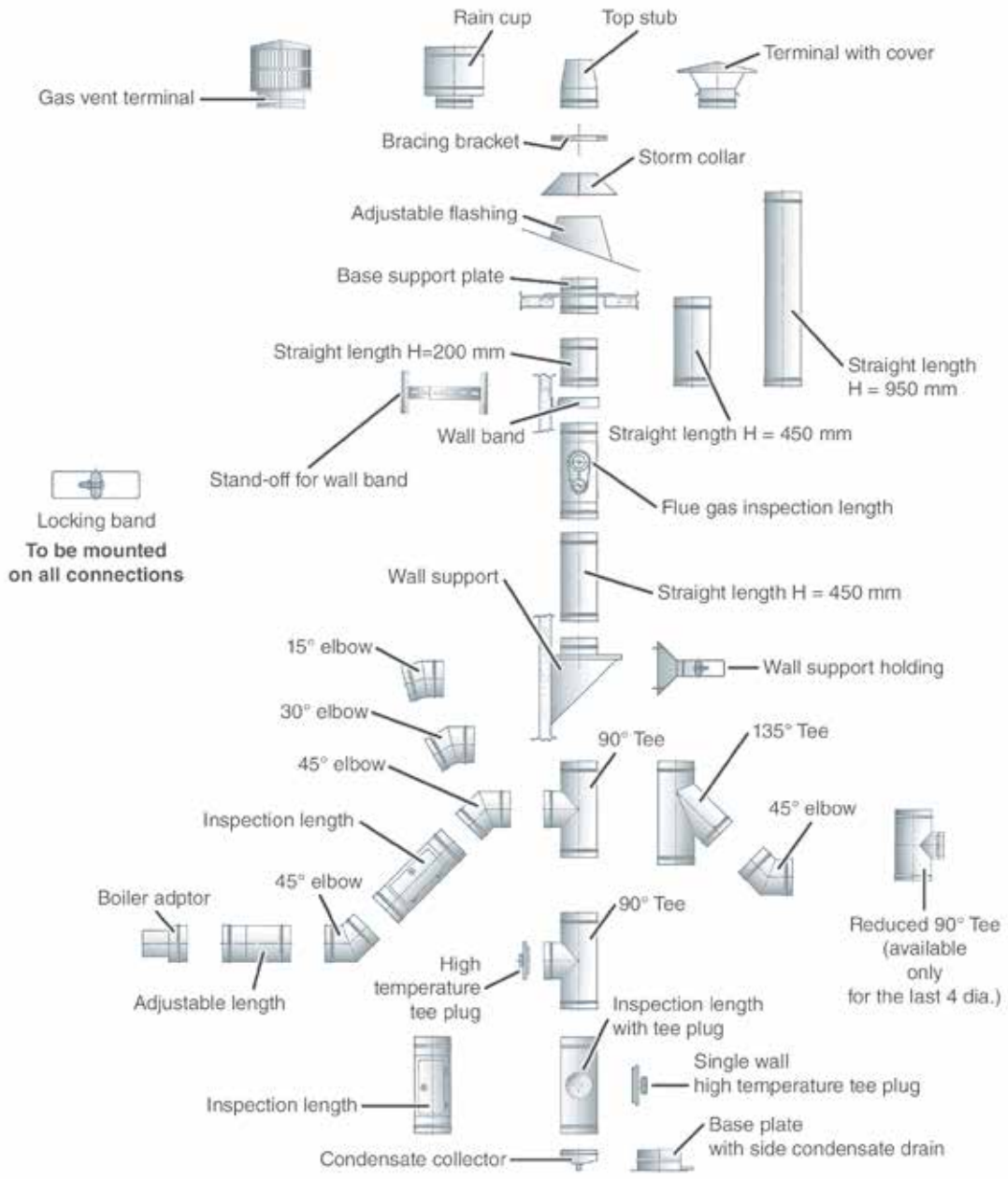
Universal double wall product for the construction of chimneys and flues

Its specifications are:

- Rapid installation.
- No thermal bridge between the inner wall and outer wall.
- Compact overall dimensions.
- Perfect mechanical resistance, guaranteed by the locking band.

Summary table

Inside diameters	**mm**	**100**	**130**	**150**	**180**	**200**	**250**	**300**	**350**
Outside diameters	**mm**	**150**	**180**	**200**	**230**	**250**	**300**	**350**	**400**
Weight per linear metre, InoxSabiana 25	kg/m	4,4	5,5	6,1	7,3	7,9	9,7	11,4	13,2
Weight per linear metre, InoxSabiana 25R	kg/m	5,1	6,2	7,0	8,3	9,0	11,0	12,9	14,9
Inner wall		AISI 316L steel, 2B finish, nominal thickness 0.5 mm							
Rock wool insulation		25 mm thick - Min. density 90 kg/m^3 - Tol. 0+30%							
InoxSabiana 25 outer wall		AISI 304 steel, BA finish, nominal thickness 0.5 mm							
InoxSabiana 25R outer wall		Annealed DHP copper 99.9, nominal thickness 0.6 mm							
Pressure class with gasket		P1 (200 Pa)							
Pressure class without gasket		N1 (40 Pa) negative pressure operation							
Max temperature of the flue gas with gasket	°C	200							
Max temperature of the flue gas without gasket	°C	450							
Gasket		Black coloured silicone rubber							
Thermal resistance of the wall R at 200 °C	m^{2}K/W	0.34	0.36	0.36	0.37	0.37	0.38	0.39	0.39
Minimum distance to combustible materials class O (flue serving a boiler on liquid or gas fuel)	mm	50							75
Minimum distance to combustible materials class G (flue serving a boiler on solid fuel)	mm	75							115
Average roughness value for the straight length		According to EN 13384-1 : 2002							
Flow resistance coefficient of the insulated components		According to EN 13384-1 : 2002							
Metric screws and bolts		Stainless steel							



Certification

The InoxSabiana 25/25R range is CE marked according to European Standard EN 1856-1:2009 with the following designations:

CE 0051

InoxSabiana 25/25R with gasket	**T200 - P1 - W - V2 - L50050 - O ***
InoxSabiana 25/25R without gasket	**T450 - N1 - D - V2 - L50050 - O ****
InoxSabiana 25/25R without gasket	**T450 - N1 - D - V2 - L50050 - G ****

(*) øi 100÷300 mm: **O50** – øi 350 mm: **O75**
(**) øi 100÷300 mm: **O50 / G75** – øi 350 mm: **O75 / G115**

In addition, the range has been subjected to further tests and has obtained the IMQ Quality voluntary mark

InoxSabiana 50
Stainless Steel Double Wall Flues

The **InoxSabiana 50** series is the result of an innovative constructional design aimed at achieving a high quality product, versatility and ease of assembly.
The choice of the materials, the use of the latest construction techniques, the care paid to every accessory, the conformity with the European **EN 1856-1:2009** standard, the continuous checks on the products and the production process guarantee the absolute reliability of the Sabiana flues.

The inner wall is made from **AISI 316L** stainless steel, 0.5 mm thick, while the outer wall is made from **AISI 304** stainless steel, 0.5 mm thick, or alternatively **copper**, 0.6 mm thick.
The insulation is rock wool, with a minimum density of 90 kg/m^3, 50 mm thick.

Longitudinal **microplasma** welding is used on both the inner and outer wall on each element.
All the non-insulated elements are made from AISI 304 stainless steel (aluminium adjustable flashing and storm collar).
In addition, the use of an innovative fastening system means that the thermal bridge between the inner and outer wall is reduced to the minimum.
The InoxSabiana 50 series includes **6 different** inside **diameters (from 350 to 600 mm)** and a complete series of accessories for solving all problems relating to the discharge of the flue gas from heat generators.

- **AISI 316 L stainless steel inner wall**
  (austenitic stainless steel 18/10 with low carbon content, grade UNI X 2, CrNiMo 1712).
  Thickness: 0,5 mm.
  Properties: high resistance to intergranular corrosion and particularly aggressive products.

- **AISI 304 stainless steel outer wall**
  (austenitic stainless steel 18/10, grade UNI X 5, CrNi 1810).
  Thickness: 0,5 mm.
  Properties: good resistance to corrosion in air and water.

  Upon request, copper outer wall is available.

- **Rock wool insulation**
  with basaltic composition, minimum density 90 kg/m^3, thickness 50 mm.
  Properties: the rock wool used is chemically neutral, is not hydrophilic nor hygroscopic, nor has a capillary action.
  It is free of asbestos and crystalline silica, has low conductivity values.
  The rock fibres making up the insulation can withstand temperatures exceeding 1000 °C.
  The insulation is classified as incombustible by the French standard MO-CSTB n° 92.34624-3.

- **Longitudinal microplasma welding** on both the inner and outer wall, in each element.

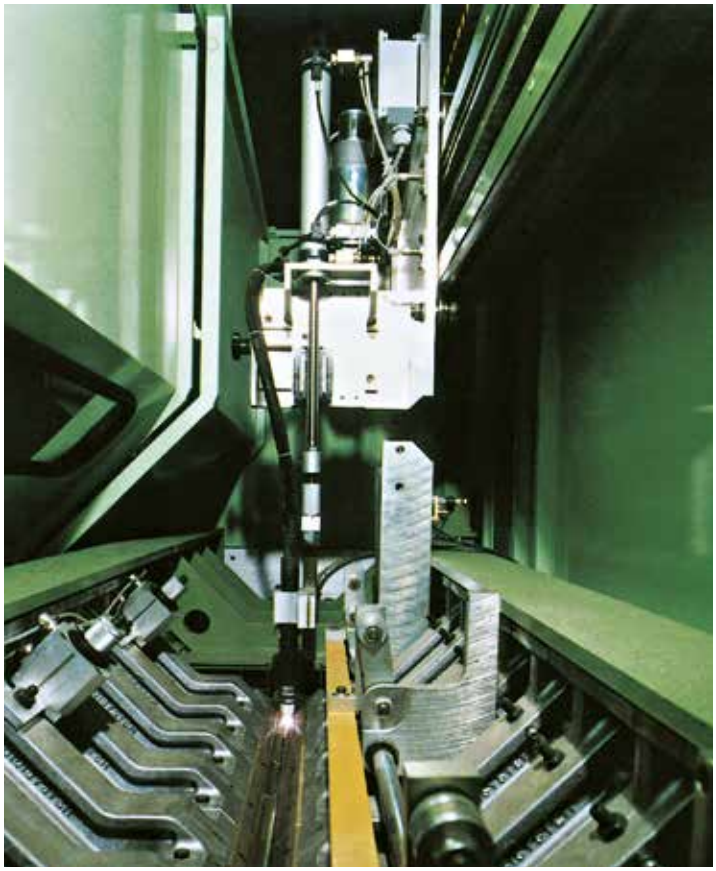
- All the non-insulated elements are made from AISI 304 stainless steel (storm collar and adjustable flashing are made in aluminium). The screws supplied are in stainless steel.

- **Minimum thermal bridge** between the inner and outer pipe, due to the adoption of an innovative fastening system.

- Special design of the inner wall so as to allow free expansion according to the flue gas temperature.

- Insulated individual cardboard packaging for each element.

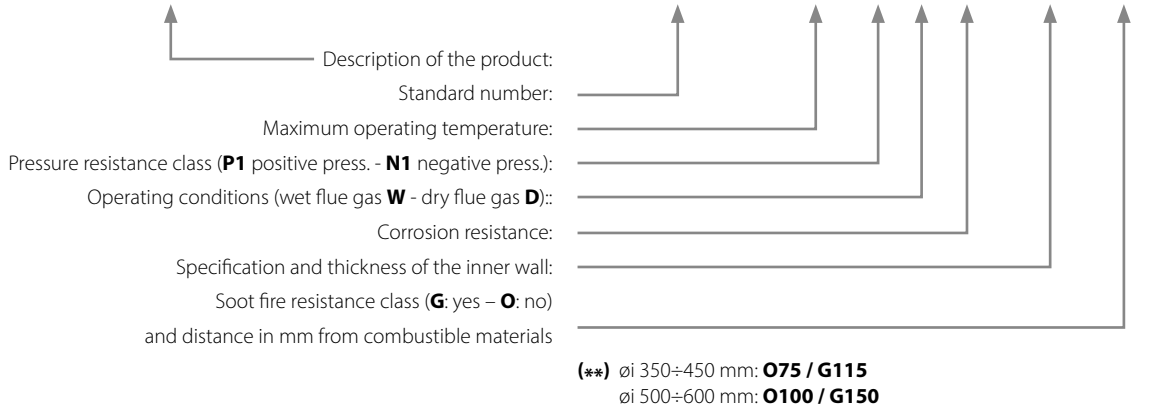
- Wall brackets and supports with adjustable lengths.



Designation of the product according to EN 1856-1:2009 standard

InoxSabiana 50/50R System Chimney **EN 1856-1:2009 T450 - N1 - D - V2 - L50050 - O ****

InoxSabiana 50/50R System Chimney **EN 1856-1:2009 T450 - N1 - D - V2 - L50050 - G ****



(**) øi 350÷450 mm: **O75 / G115**
øi 500÷600 mm: **O100 / G150**

General characteristics

- Element locking bands.
- Possibility to turn each element 360° while maintaining the tightness characteristics unaltered.

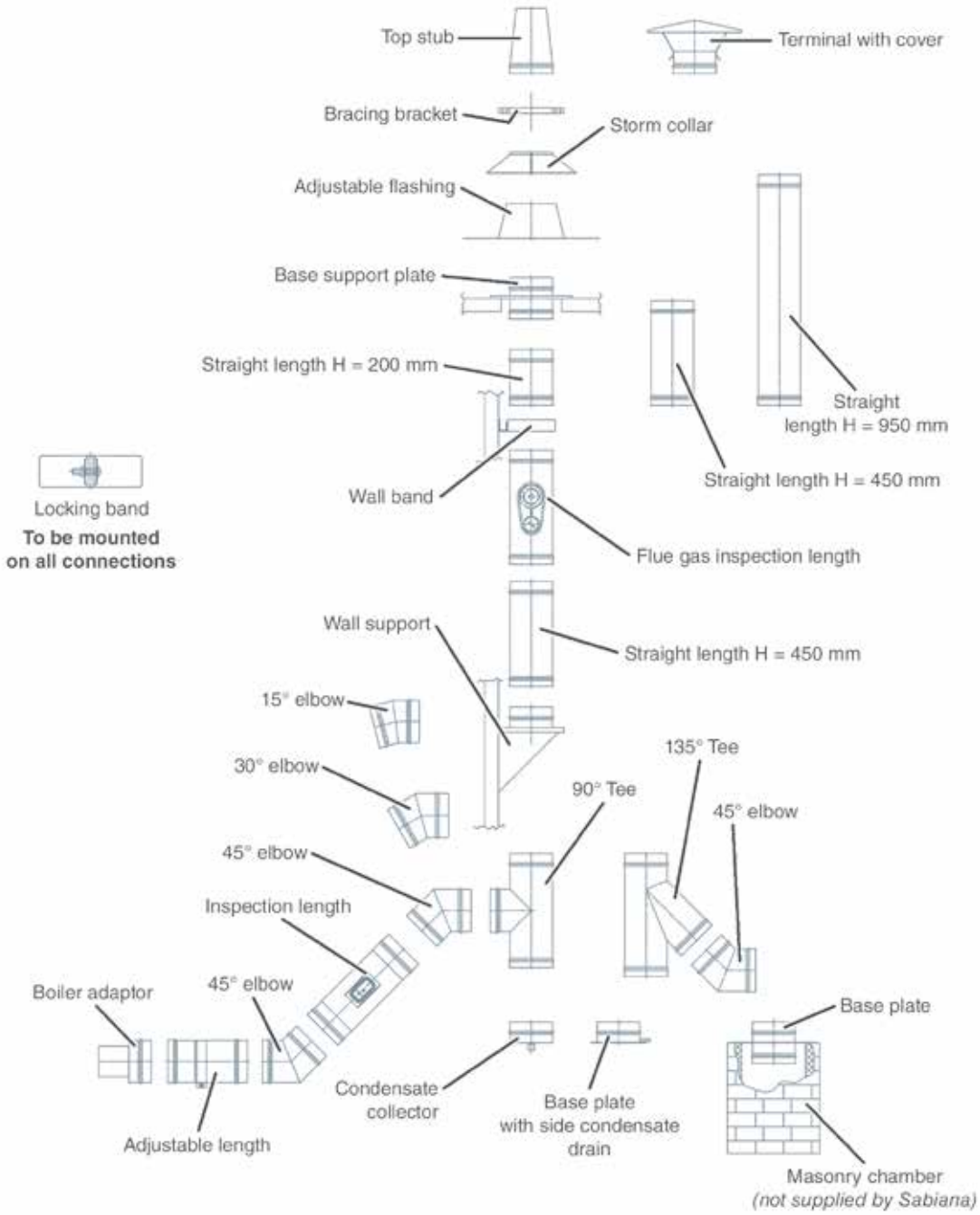
Universal double wall product for the construction of chimneys and flues

Its specifications are:

- Rapid installation.
- No thermal bridge between the inner wall and outer wall.
- Compact overall dimensions.
- Perfect mechanical resistance, guaranteed by the locking band.

Summary table

Inside diameters	**mm**	**350**	**400**	**450**	**500**	**550**	**600**
Outside diameters	**mm**	**450**	**500**	**550**	**600**	**650**	**700**
Weight per linear metre, InoxSabiana 50	kg/m	17,5	19,5	22,0	24,0	26,0	28,0
Weight per linear metre, InoxSabiana 50R	kg/m	19,5	22,0	24,5	26,5	29,0	31,5
Inner wall		AISI 316L steel, 2B finish, nominal thickness 0.5 mm					
Rock wool insulation		50 mm thick - Min. density 90 kg/m^3 - Tol. 0+30%					
InoxSabiana 50 outer wall		AISI 304 steel, BA finish, nominal thickness 0.5 mm					
InoxSabiana 50R outer wall		Annealed DHP copper 99.9, nominal thickness 0.6 mm					
Pressure class		N1 (40 Pa) negative pressure operation					
Max temperature of the flue gas	°C	450					
Thermal resistance of the wall R at 200 °C	m^{2}K/W	0,74	0,75	0,76	0,77	0,77	0,78
Minimum distance to combustible materials class O (flue serving a boiler on liquid or gas fuel)	mm	75			100		
Minimum distance to combustible materials class G (flue serving a boiler on solid fuel)	mm	115			150		
Average roughness value for the straight length		According to EN 13384-1 : 2002					
Flow resistance coefficient of the insulated components		According to EN 13384-1 : 2002					
Metric screws and bolts		Stainless steel					



Certification

The InoxSabiana 50/50R range is CE marked according to European Standard EN 1856-1:2009 with the following designations:

CE 0051

InoxSabiana 50/50R **T450 - N1 - D - V2 - L50050 - O ****

InoxSabiana 50/50R **T450 - N1 - D - V2 - L50050 - G ****

(**) øi 350÷450 mm: **O75 / G115**
øi 500÷600 mm: **O100 / G150**

InoxMono Sabiana

Stainless Steel Single Wall Flues

The **InoxMono Sabiana** series has been designed to offer the maximum guarantee of safety and long life in the discharge of flue gas from heat generators.
The choice of the materials, the use of the latest construction techniques, the care paid to every accessory, the continuous checks on the products and the production process, and the quality mark issued by the prestigious **Italian Institute IMQ**, guarantee the absolute reliability of the Sabiana flues.

Each element in contact with the flue gas is made from **AISI 316L** stainless steel, 0.5 mm thick, with longitudinal **microplasma** welding.
The 90° T sections, flue gas monitoring and inspection module are made using the **deep drawing process, thus avoiding welding**.

All the support and fastening elements are made from AISI 304 stainless steel (aluminium adjustable flashing and storm collar).

The male and female of each individual element are **simultaneously** created by the same belling machine, in order to obtain a perfect coupling calibration with maximum tolerance equal to +/- 0.15 mm.

The InoxMono series includes **11 different** inside diameters **(from 80 to 300 mm)** and a complete series of accessories for satisfying all installation requirements.

- **AISI 316 L Stainless steel wall**
  (austenitic stainless steel 18/10Mo with low carbon content UNI X 2 CrNiMo 1712).
  Thickness: 0,5 mm.
  Properties: high resistance to intergranular corrosion and particularly aggressive products.

- **Silicone rubber sealing gasket** resistant up to 200 °C temperature.

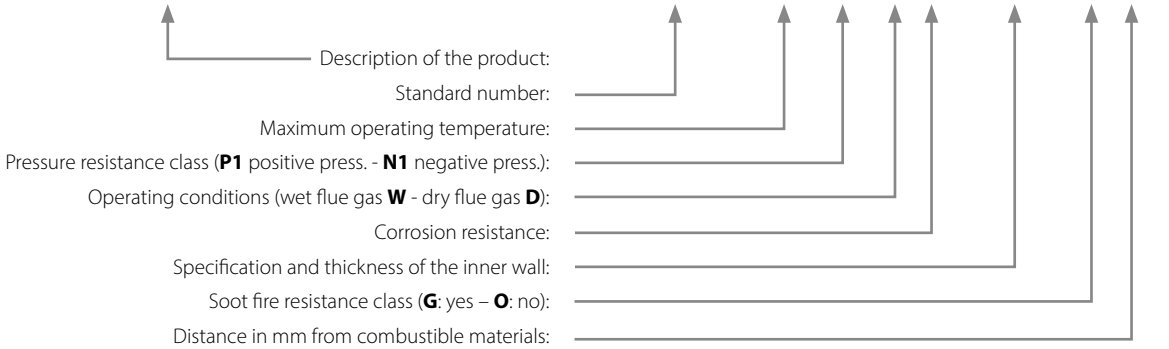
- **Longitudinal microplasma welding** of each element.

- **90° tee** made using the deep drawing process.

- **All clamping elements** in stainless steel AISI 304
  (flashing and storm collar in aluminium).
  The screws supplied are in stainless steel.

Designation of the product according to EN 1856-2:2009 standard

InoxMono Duct with gasket	**EN 1856-2:2009 T200 - P1 - W - V2 - L50050 - O**
InoxMono Duct without gasket	**EN 1856-2:2009 T600 - N1 - D - V2 - L50050 - G**
InoxMono Smoke Duct with gasket	**EN 1856-2:2009 T200 - P1 - W - V2 - L50050 - O50**
InoxMono Smoke Duct without gasket	**EN 1856-2:2009 T600 - N1 - D - V2 - L50050 - G600M**



General characteristics

- Element locking bands.
- Resistance to condensate even under pressure (provided by certified silicone gasket).
- Possibility to turn each element 360° while maintaining the tightness characteristics unaltered.

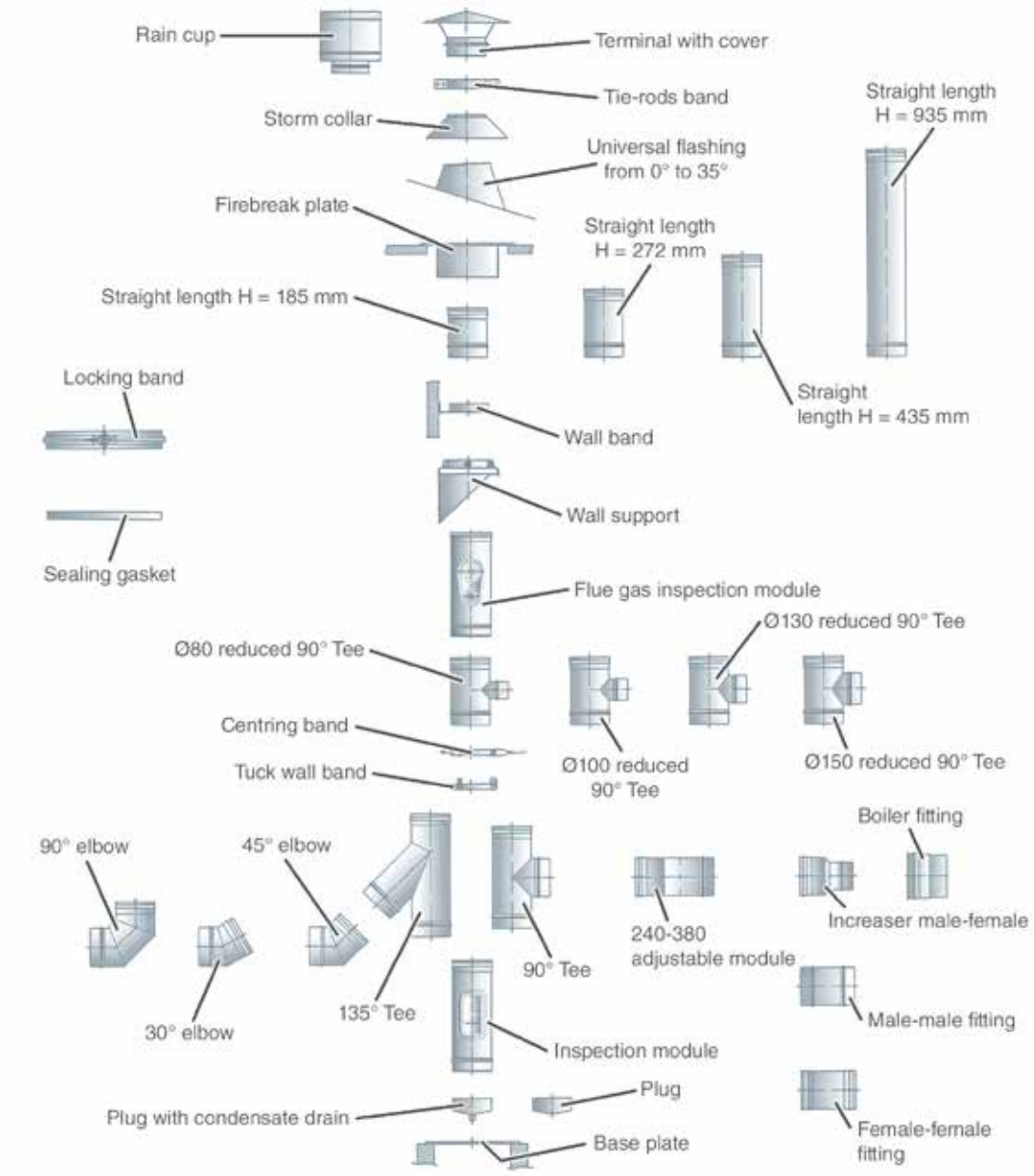
Universal single wall product for the realisation of relining and smoke ducts

Its specifications are:

- Rapid installation.
- Compact overall dimensions.
- Perfect mechanical resistance, guaranteed by the locking band.

Summary table

Nominal diameters	mm	80	100	120	130	140	150	160	180	200	250	300
Weight per linear metre	kg/m	1,1	1,4	1,7	1,8	2,0	2,1	2,3	2,5	2,8	3,5	4,2
Material		Steel AISI 316L 2B - AISI 316L BA nominal thickness 0.5 mm										
Pressure class with gasket		P1 (200 Pa)										
Pressure class without gasket		N1 (40 Pa) operation under pressure										
Max temperature of the flue gas with gasket	°C	200										
Max temperature of the flue gas without gasket	°C	600										
Gasket		Black coloured silicone rubber										
Minimum distance to combustible materials class O (chimney serving a generator with liquid or gas fuel)	mm	Smoke duct: 50										
Minimum distance to combustible materials class G (chimney serving a generator with solid fuel)	mm	Smoke duct: 600 Minimum distance obtained from test										
Average roughness value for the straight modules		According to EN 13384-1 : 2002										
Resistance coefficient to components flow		According to EN 13384-1 : 2002										
Metric screws and bolts		Stainless steel										



Certification

The InoxMono Sabiana range is CE marked according to European Standard EN 1856-2:2009 with the following designations:

CE 0051

InoxMono Duct with gasket	**T200 - P1 - W - V2 - L50050 - O**
InoxMono Duct without gasket	**T600 - N1 - D - V2 - L50050 - G**
InoxMono Smoke duct with gasket	**T200 - P1 - W - V2 - L50050 - O50**
InoxMono Smoke duct without gasket	**T600 - N1 - D - V2 - L50050 - G600M**

In addition, the range has been subjected to further tests and has obtained the IMQ Quality voluntary mark

Electric units

Sabiana has been producing unit heaters and electric fan coil units, suitable for heating industrial and commercial environments.
Such electric units are suitable for satisfying all thermal needs of little used spaces that are not worthy of being equipped with a thermal power station.

All the Sabiana thermal units guarantee easy installation and safety.

The **Electra 90** electric unit heaters for horizontal discharge are made in **7 sizes**, with heat outputs **from 6 to 26 Kw**.

The **Electramatic** units resume the idea of electric heater with all safety and control devices that make the unit be independent. They are equipped with an electric panel fitted on the unit and are completely automated. They only need connections to the power supply, to the control panel for remote control and to the ambient thermostat. Heat outputs **from 6 to 24 Kw**.

The **FSE** Sabiana fan coil units were designed and built to heat electrically residential and working environments, offices and shops, etc. They are three-phase (3Ph+N) or single-phase powered according to the execution reported on the identification label. They are available in **5 sizes** (3000-8500 W) for wall installation.

Electra 90 / ElectraMatic

Electric Unit Heater

The **Electra 90** electric unit heaters for horizontal discharge are made in **7 sizes**, with heat outputs **form 6 to 36 kW**.
The electrical coil has two-stage sealed electrical resistance made of finned steel tubes, to allow two step operation.
The power supply is three phase, 400 V - 50 Hz.

The **ElectraMatic** electric unit heaters for horizontal discharge are made in **5 sizes**, with heat outputs **from 6 to 24 kW**.
The electrical coil has two-stage sealed electrical resistance made of finned steel tubes, to allow two step operation.

The power supply is three phase, 400 V - 50 Hz.
These units **come with** an electrical control panel that includes the auxiliary circuits, operating and safety thermostat, and terminal block ready for connection to the line, to the remote control panel and to the room thermostat.

TECHNICAL CHARACTERISTICS

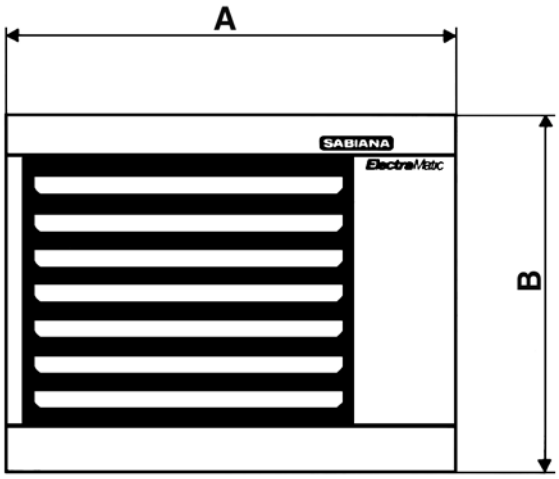
- Covering unit made out of stove-enamelled phosphated steel plate panels.
- Supporting frame in galvanised steel plate.
- Coil with protected electrical resistances, in finned steel pipe. The power is divided into two stages in order to allow it to operate at partialized load.
- Helicoidal fan with light alloy, anti-spark blades, directly connected to the motor axis.
- Asynchronous **400V - 3f - 50Hz, 6-pole** motor, with closed construction, class B insulation and IP 44 protection.
- Electrical fan support with sturdy metal basket made of four radial arms and safety mesh basket in round steel pipe. The junction between the support and the rear wall of the casing is created by interposing neoprene anti-vibration supports that ensure operation without vibrations and resonance.
- Safety thermostat against overheating.
- Terminal board for electrical connections.

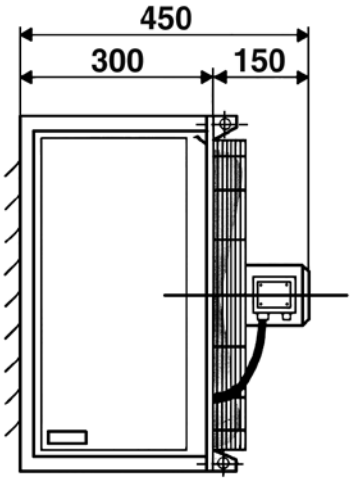
ElectraMatic Model

- Electric motor equipped with thermal protection, incorporated in the wiring, with automatic re-insertion.
- Electrical control panel completely accessible by removing a side panel. **It includes all** control and protection automations, the auxiliary circuits with safety thermostats and the terminal boards ready to be connected to the supply, to the remote control panel, to room thermostat, etc.

Electra 90 / ElectraMatic

DIMENSIONS, WEIGHT AND TECHNICAL DATA

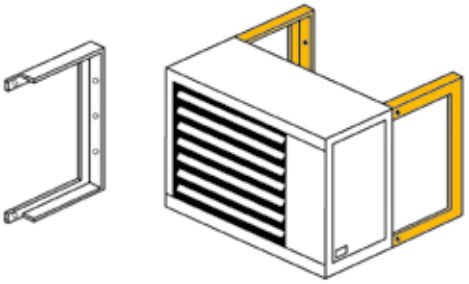




Model Electra 90			06E	09E	11E	17E	24E	30E	36E
Model ElectraMatic			**EM6**	**EM9**	**EM11**	**EM17**	**EM24**	–	–
Output		W	6480	9720	11100	16650	24000	30000	36000
Power steps	1ª	W	3240	3240	5550	5550	6000	12000	12000
	2ª	W	3240	6480	5550	11100	18000	18000	24000
Air flow		m^3/h	1000	1000	1800	1800	3600	3500	3400
Leaving air temp. (entering +15°C)		°C	33	44	35	44	36	42	47
Throw		m	6	6	8	8	12	12	12
Mounting height	Min.	m	2,5	2,5	3,0	3,0	3,0	3,0	3,0
	Max.	m	4,0	4,0	4,5	4,5	5,0	5,0	5,0
Helicoidal fan 400 V - 3f - 50 Hz		A	0,22	0,22	0,22	0,22	0,47	0,47	0,47
		g/min	900	900	900	900	900	900	900
		W	110	110	110	110	230	230	230
Noise level at 5 m **(*)**		dB(A)	43	43	48	48	50	50	50
Dimensions	A	mm	570	570	650	650	730	730	730
	B	mm	470	470	570	570	670	670	670
Air outlet section	L	mm	400	400	480	480	560	560	560
	h	mm	320	320	420	420	520	520	520
Fan		Ø	300	300	400	400	500	500	500
Weight (approx.) **ElectraMatic**		kg	32	35	43	45	60	–	–
Weight (approx.) **Electra 90**		kg	30	33	41	43	58	61	64

(*) = The sound pressure levels dB(A) are measured at a distance of 5 m, directional factor Q = 2, compliant with the EN 3744 standard.

Brackets for wall installation



Remote switch
(for ElectraMatic only)

FSE

Electric Fan Convector

The **FSE** electric fan convectors are made in 5 sizes, with heat outputs **from 3 to 8,5 kW**.

The electric coil has two-stage sealed electrical resistance made of finned steel tubes to allow two step operation.

The power supply is three phase, 400 V - 50 Hz.

The first two sizes **(up to 4,5 kW)** can also be supplied in the single-phase version.

As standard they are fitted with two speed control, room thermostat and switch for electric heater two step operation.

TECHNICAL CHARACTERISTICS

Version: three-phase 400 V~ (3p + N) or single-phase 230 V~.
Only for vertical installation.

Casing: in hot dip galvanised and pre-painted steel; it is easily removed for complete access to the unit.
The air outlet grill, located on the upper part of the unit, **is reversible**.

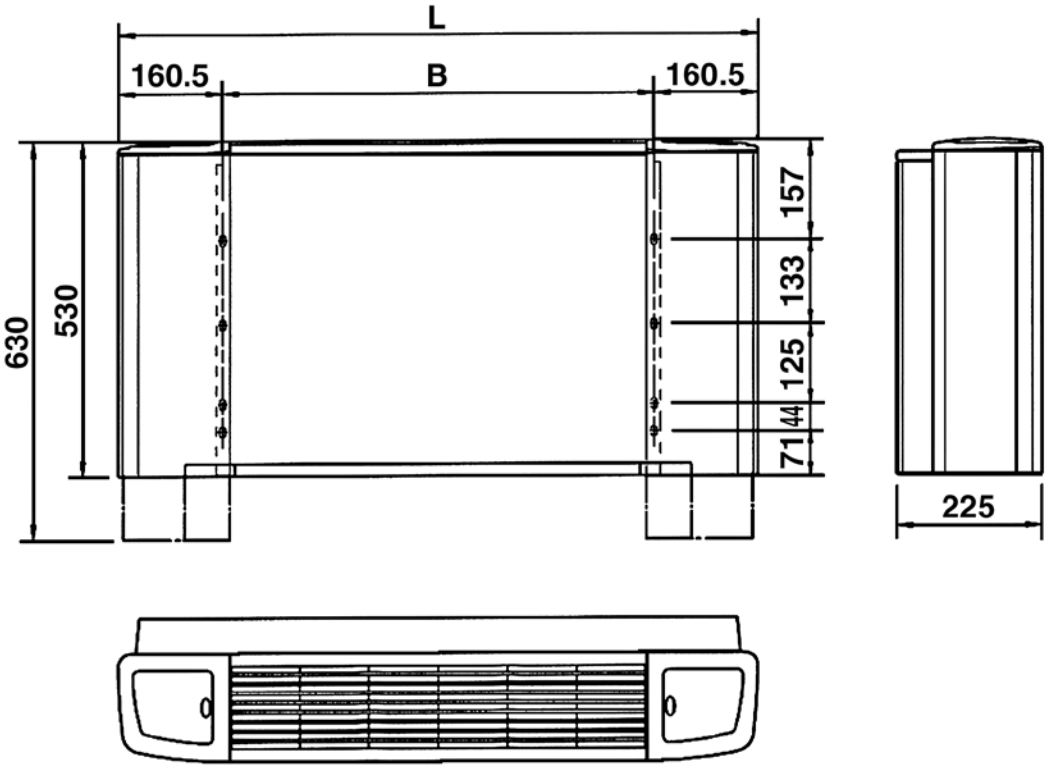
Fan assembly: made of ultra-silent double intake **centrifugal fans** with statically and dynamically balanced aluminium impellers keyed directly onto the motor shaft.

Electric motor: the motor has three speeds with capacitor, and is fitted on sealed for life bearings and is secured on anti-vibration and self-lubricating mountings. Protection IP 20, class B.

Coil: protected electrical resistances with firmed steel pipe.
The power is divided into two stages in order to allow it to operate **at partialized load**.

Electrical panel: includes all control and protection automations, auxiliary and safety circuits and the terminal board, ready for connections to the supply line.

Control: built-in control with ON-OFF switch, speed switch and room thermostat.

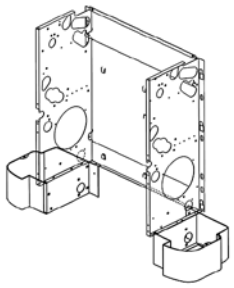


Model	Dimensions (mm)		Weight with packaging
	B	L	kg
FSE 1	454	775	27
FSE 2	669	990	31
FSE 3	884	1205	39
FSE 4	1099	1420	45
FSE 5	1099	1420	45

Model			230 V~						400 V~ (3p+N)															
			FSE 1			FSE 2			FSE 1			FSE 2			FSE 3			FSE 4			FSE 5		
Speed			1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Air flow		m^3/h	190	240	300	290	360	450	190	240	300	290	360	450	380	480	600	650	800	1000	650	800	1000
Heat output		kW	-	1,90	3,00	-	2,90	4,50	-	1,90	3,00	-	2,90	4,50	-	4,00	6,00	-	5,00	7,50	-	5,60	8,50
Motor output		W	20	30	50	45	50	60	20	30	50	45	50	60	60	80	95	65	85	125	65	85	125
Absorbed power **(*)**		A	13,5			20,0			5,0			7,0			9,5			10,0			13,0		
Sound power	Lw	dB(A)	40	45	50	42	47	52	40	45	50	42	47	52	35	42	51	48	56	59	48	56	59
Sound pressure **(**)**	Lp	dB(A)	31	36	41	33	38	43	31	36	41	33	38	43	26	33	42	39	47	50	39	47	50

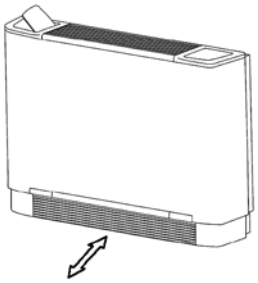
(*) = Figures at high power and high speed.
(**) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

PAP **Feet**



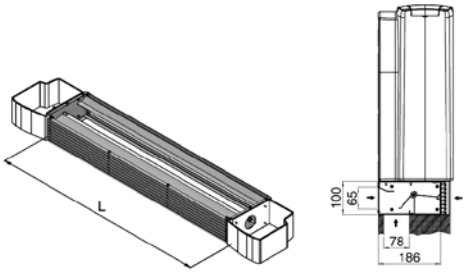
GAP **Aluminium intake grid**

To be installed with PAP feet.



SAE **Damper for fresh air intake**

(not motorizable)



Mounted fitted control

- ON-OFF switch.
- Manual 3 speed switch:
  - Fan only at low speed.
  - Low heating power at medium speed.
  - High heating power at high speed.
- Simultaneous thermostatic control of the electric heater and fan.

The unit is equipped with a manually reset safety thermostat that stops power to the electrical coil.

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