NEW
CARISMA –ECM
Fan Coil Units

Product Range

ICIM
Quality management systems
ISO 9001 – Cert. n° 0545/4

SABIANA
ENVIRONMENTAL COMFORT

DUCK STRIP RADIANT PANELS: AEROSPATIALE TOULOUSE
NEW **AIRBUS A380** PRODUCTION PLANT.
INSTALLATION HEIGHT: 40 m

JANUS 05 AND **POLARIS** AIR CONDITIONERS

SKYSTAR FAN COIL UNITS **CASSETTE**

SABIANA
ENVIRONMENTAL COMFORT

Sabiana, the company

Choose Sabiana, choose safety

Choose SABIANA and you choose safety. Safety in terms of products, performance and reliability. Safety also means a relationship based on honesty and competence.

For this reason SABIANA has kept for 80 years a leading position in the production of heating and air conditioning equipment for use in industry, trade and sports.

Sabiana manufacturing plant *in Corbetta*

In 1929 SABIANA was founded by Franco Binaghi and Benvenuto Anatrella and began its activity with the production of heating appliances. After having brilliantly overcome the war years and the post-war period, the company adapted its range of products to modern requirements, introduced a modernisation and automation program for working procedures and dedicated much attention to its most important product, the unit heater so that it could become a leader in Europe in this market.

In the Seventies SABIANA introduced the radiant strip, which very soon demonstrated its qualities as the most modern and efficient heating system for large areas. The design and production technologies, which were adopted for the radiant strip, assured that SABIANA became the market leader in Europe for this product.
The continuous updating of the product range has progressed with the introduction of the fan-coils, cassettes and air handling units, which satisfy all the needs of air treatment, and of the stainless steel flues.

The new Sabiana 2 manufacturing plant *in Magenta*
for the production of Fan Coils and Cassettes

With eighty years of experience and its high reliability SABIANA stands up for its principal purpose: to guarantee to engineers and customers the security of a safe product and of a trustful relationship with the supplier. Thanks to this philosophy SABIANA is prepared to accept the challenges of the coming years.

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

Sabiana take part to the Eurovent program
of fan coil performance certification. The official figures are published
in the web site **www.eurovent-certification.com** and
in the web site **www.certiflash.com**.

Wireless Control System FreeSabiana

Main components:

- A remote ***control*** which features a button panel and LCD display and can be wall-mounted or positioned on a dedicated table support. It enables the control of all the operating variables of the fan coil units in different configurations. The control is battery powered. The temperature and the operating speed of the fan coil unit are set with two large buttons featuring user friendly graphics.
- A ***power unit*** to be installed on the fan coil (fan coil interface). It controls the fan and the valves of the fan coil. The power unit is connected to the electric supply. The power unit receives the information required to control the fan coil both from the remote control and locally, such as the temperature of the coil.
- A room ***temperature probe,*** which can be wallmounted or positioned on a dedicated table support. It is a battery powered device, able to measure the air temperature in the spot where it is positioned, generating temperature information which is communicated to the other devices.

Free Sabiana is an innovative, **fully wireless,** electronic system for use with fan coil units, based on radio communication.

This technology **provides installation flexibility and a more accurate measurement of the room temperature.** The probe can be moved until the most suitable position is found, without the worry of changes in the environment layout and of its furniture and also without mounting it on a wall. If a new fan coil unit is added, no electrical wiring for the control system is required: just define the control unit and the probe which regulates it. The improved measurement accuracy derives from the possibility to position the probe near the typical location of the user: this enables to keep the temperature exactly at the required value with more energy savings compared with a traditional measurement system.

Transmission is based on communication protocol IEE802.15.4, the most suitable way to transmit a relatively low amount of information with very low consumption and high reliability.

The system has been certified by a leading independent body, officially recognized by the EU authorities and its sale has been authorized in all the EU and EFTA countries.

Control unit with support

Power unit

Probe with support

Carisma

Fan Coil Units

THE ULTRA QUIET FAN COIL

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 to decrease electric consumption by more than 50% compared to traditional asynchronous motors. They enable to control the air flow continuously and the ambient temperature with precision, with further benefits in terms of very low noise levels thanks to the reduced average working speed.

The 4 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.

As a special option, the Carisma range can be fitted with a patented electronic filter featuring a class D rating according to Standard UNI 11254, with similar performances to the initial ones of a traditional mechanical filter featuring a class F9 rating according to Standard UNI EN 779.

A full range of adjustment and control devices is available including the innovative patented wire-less system, for rapidly obtaining correct environmental temperature and with an investment proportional to performances, comfort and desired measurement precision.

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 fitted installations.

Electric and electronic controls:
All the controls to be fitted on the unit of the new range have been totally re-designed and feature a modern and attractive design. An innovative patented wireless control system called ***FreeSabiana*** allows adjusting the room temperature with high precision and high installation flexibility.

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

www.eurovent-certification.com
www.certiflash.com

Eurovent Certification

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

- *9 sizes: from 220 to 1500 m³/h*
- *1 battery: 3 or 4 rows*
- *2 batteries: 3 or 4 rows (cooling) and 1 or 2 rows (heating)*
- *5 versions: MV, MO-MVB, IV-IO*

Fan Coil Units with centrifugal fan Carisma CRC

The ultra quiet fan coil

The CRC range is offered with standard 6 speed motors, 3 of which connected and one static, useful up to 50 Pa. It is the ideal choice for all those applications where wanting to optimise price/performance ratio, though guaranteeing excellent acoustic result, contained electric consumption and a design suitable for every modern architectural solution.

EUROVENT CERTIFIED PERFORMANCE
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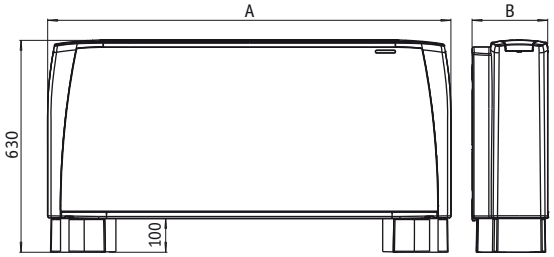
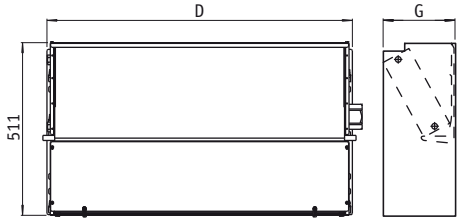
MV Model

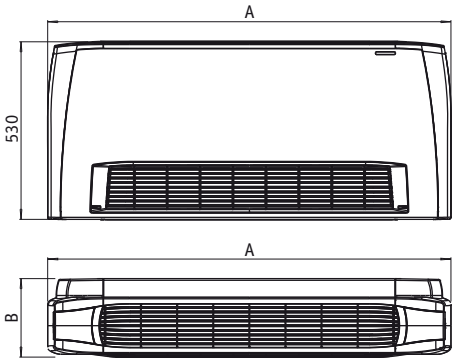


IV-IO Model *Vertical installation*

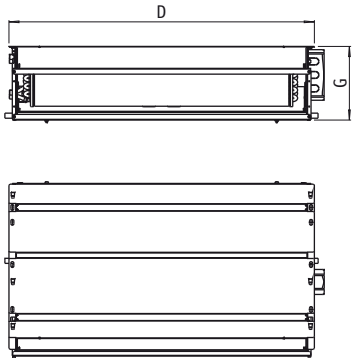


MV - MO - MVB		
Size	A	B
1	670	225
2	770	225
3	985	225
4	985	225
5	1200	225
6	1200	225
7	1415	225
8	1415	255
9	1415	255

MO-MVB Model



IV-IO Model *Horizontal installation*



IV - IO		
Size	G	D
1	218	374
2	218	474
3	218	689
4	218	689
5	218	904
6	218	904
7	218	1119
8	248	1119
9	248	1119

CarismaSabiana CRC. 2 pipes unit. The following standard rating conditions are used:

COOLING (summer mode) Entering air temperature + 27°C d.b., + 19°C w.b. Water temperature + 7/12°C

HEATING (winter mode) Entering air temperature + 20°C Entering water temperature + 50°C Water flow rate as for the cooling conditions

Figures at high speed

CRC MODEL		CRC 13	CRC 23	CRC 33	CRC 43	CRC 53	CRC 63	CRC 73	CRC 83	CRC 93	CRC 14	CRC 24	CRC 34	CRC 44	CRC 54	CRC 64	CRC 74	CRC 84	CRC 94
Air flow	m³/h	220	295	385	485	650	760	925	1200	1500	220	295	385	485	650	760	925	1200	1500
Cooling total emission	kW	1.03	1.56	2.39	2.87	3.64	4.09	5.11	5.82	6.74	1.23	1.81	2.57	3.12	4.09	4.79	5.58	6.47	7.60
Cooling sensible emission	kW	0.86	1.24	1.80	2.19	2.82	3.20	3.95	4.68	5.55	0.97	1.38	1.90	2.34	3.07	3.60	4.23	5.06	6.05
Heating	kW	1.39	2.02	2.92	3.56	4.50	5.09	6.27	7.66	9.06	1.55	2.20	3.07	3.76	4.83	5.88	6.71	8.43	10.08
Δp Cooling	kPa	2.3	6.5	19.7	27.2	16.2	19.8	34.2	19.0	24.6	5.6	13.9	11.5	15.5	31.3	36.2	27.7	17.5	23.2
Δp Heating	kPa	2.0	5.5	16.7	23.1	13.8	16.8	29.1	16.2	20.9	4.7	11.6	9.2	12.2	25.7	29.3	23.7	14.5	19.3
Fan	W	33	32	41	44	61	78	103	130	176	33	32	42	44	61	78	103	130	176
Sound power Lw (Medium speed)	dB(A)	39	40	40	39	41	46	51	56	58	39	40	40	39	41	46	51	56	58
Sound pressure Lp (High speed)	dB(A)*	36	38	40	38	39	43	47	51	55	36	38	40	38	39	43	47	51	55
Sound pressure Lp (Medium speed)	dB(A)*	30	31	31	30	32	37	42	47	49	30	31	31	30	32	37	42	47	49
Sound pressure Lp (Low speed)	dB(A)*	23	21	27	24	22	28	33	36	41	23	21	27	24	22	28	33	36	41

* 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 CRT — Fan Coil Units with tangential fan

- *6 sizes: from 90 to 945 m³/h*
- *1 battery: 3 rows*
- *2 batteries: 3 rows (cooling) and 1 row (heating)*
- *5 versions: MV, MO-MVB, IV-IO*

Low energy consumption tangential fan

The CRT range uses a 6 speed ventilating unit with extremely reduced electric consumptions. The large tangential fan (120 mm) supplies a consistent air flow with sound pressure values at medium speed which are below 35 dB(A)* and at minimum speed below 28 dB(A)* on all models.

Long laboratory tests have enabled obtaining a very stable and regular functioning in time, also in critical conditions, like in situations where the filter and the battery have not been regularly cleaned.

The motor, with newly conceived bearings, is guaranteed for double the number of hours compared to the previous range and stays at a particularly low functioning temperature, even after many days of continuous functioning.

It is the ideal choice for all large installations with maximum attention to consumptions and environmental sound levels.

CarismaSabiana CRT. 2 pipes unit. The following standard rating conditions are used:

COOLING	Entering air temperature	+ 27°C d.b.,	+ 19°C w.b.	**HEATING**	Entering air temperature	+ 20°C
(summer mode)	Water temperature	+ 7/12°C		(winter mode)	Entering water temperature	+ 50°C
					Water flow rate as for the cooling conditions	

Figures at high speed

CRT MODEL		CRT 13	CRT 23	CRT 33	CRT 53	CRT 63	CRT 73
Air flow	m³/h	200	250	370	495	635	780
Cooling total emission	kW	0.87	1.24	2.04	2.76	3.33	4.18
Cooling sensible emission	kW	0.74	0.99	1.56	2.12	2.61	3.23
Heating	kW	1.24	1.66	2.55	3.47	4.26	5.27
Δp Cooling	kPa	1.8	4.1	15.2	9.9	13.8	25.1
Δp Heating	kPa	1.5	3.3	12.5	8.1	11.4	19.8
Fan	W	17	19	23	33	44	53
Sound power Lw (Medium speed)	dB(A)	36	35	36	39	43	43
Sound pressure Lp (High speed)	dB(A)*	35	34	35	34	41	41
Sound pressure Lp (Medium speed)	dB(A)*	27	26	27	28	34	34
Sound pressure Lp (Low speed)	dB(A)*	22	22	22	22	27	27

* 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 CRR — Fan Coil Units with tangential fan

- *4 sizes: from 110 to 500 m³/h*
- *1 battery: 2 rows*
- *1 version: MV*

High comfort for small environments

The series CRR is designed to be equipped with a tangential fan and the units are of smaller dimensions for smaller environments (depth 18 cm). Carisma is the ideal equipment for offices and houses, is no longer a simple technical product but also a furnishing element that can give added value to the aesthetics of the surrondigs.

CarismaSabiana CRR. 2 pipes unit. The following standard rating conditions are used:

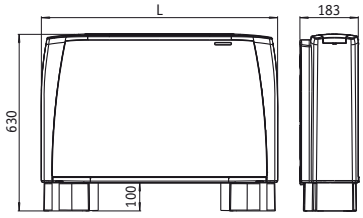
COOLING	Entering air temperature	+ 27°C d.b.,	+ 19°C w.b.	**HEATING**	Entering air temperature	+ 20°C
(summer mode)	Water temperature	+ 7/12°C		(winter mode)	Entering water temperature	+ 50°C
					Water flow rate as for the cooling conditions	

Figures at high speed

CRR MODEL		CRR 1	CRR 2	CRR 3	CRR 4
Air flow	m³/h	180	250	360	500
Cooling total emission	kW	0.80	1.30	1.90	2.80
Cooling sensible emission	kW	0.70	1.01	1.53	2.05
Heating	kW	1.20	1.60	2.60	3.60
Δp Cooling	kPa	11.0	20.0	7.8	20.0
Δp Heating	kPa	7.0	16.5	7.0	18.8
Fan	W	28	27	31	36
Sound power Lw (Medium speed)	dB(A)	37	39	39	40
Sound pressure Lp (High speed)	dB(A)*	33	36	36	37
Sound pressure Lp (Medium speed)	dB(A)*	28	30	30	31
Sound pressure Lp (Low speed)	dB(A)*	25	25	25	25

* 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.

MOD.	CRR 1	CRR 2	CRR 3	CRR 4
L	670	770	985	1200



CB–T–ECM control

CR–T–ECM control

IR–ECM electronic board

Fan Coil Units with inverter board

Carisma **ECM**

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 is having 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.

The extreme efficiency, also at low speed, makes possible a great reduction in electric consumption (less than 50% in comparison to CRC and CRT range motor) with absorption values under normal operating conditions that **do not exceed 16 Watt for *CRC–ECM* models and do not exceed 8 Watt for *CRT–ECM* models** on the entire range. The excellent values of the CRC and CRT 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.

This is the right choice for all buildings designed for achieving the highest energy class.

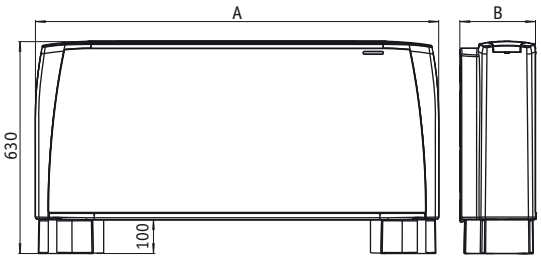
EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

www.eurovent-certification.com
www.certiflash.com

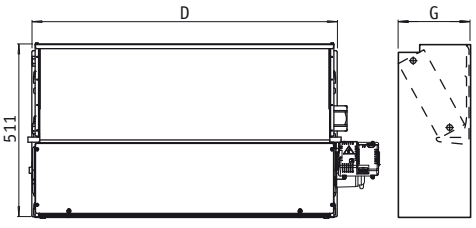
MV - MO - MVB		
Size	A	B
1	670	225
2	770	225
3	985	225
4	985	225
5	1200	225
6	1200	225
7	1415	225
9	1415	255

IV - IO		
Size	G	D
1	218	374
2	218	474
3	218	689
4	218	689
5	218	904
6	218	904
7	218	1119
9	248	1119

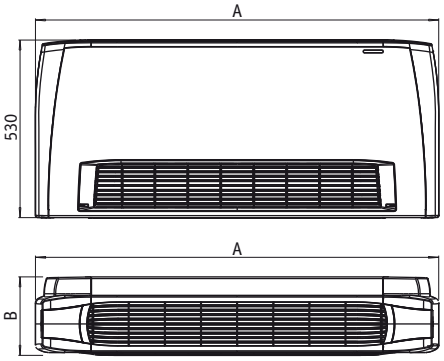
MV Model



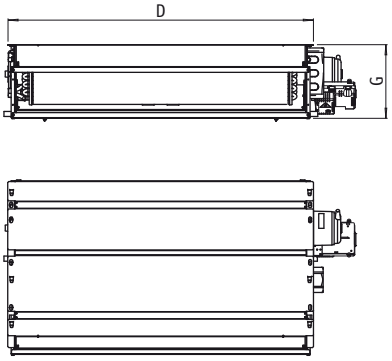
IV-IO Model *Vertical installation*



MO-MVB Model



IV-IO Model *Horizontal installation*



Carisma CRC–ECM

Fan Coil Units with centrifugal fan and inverter board

Carisma Sabiana CRC–ECM. 2 pipes unit.

The following standard rating conditions are used:

COOLING (summer mode) Entering air temperature + 27°C d.b., + 19°C w.b. Water temperature + 7/12°C

HEATING (winter mode) Entering air temperature + 20°C Entering water temperature + 50°C Water flow rate as for the cooling conditions

Figures at high speed

ECM MODEL		CRC 23	CRC 43	CRC 63	CRC 73	CRC 93	*CRC 24*	*CRC 44*	*CRC 64*	*CRC 74*	*CRC 94*
Inverter Power		10	10	10	10	10	*10*	*10*	*10*	*10*	*10*
Speed		**MAX**	**MAX**	**MAX**	**MAX**	**MAX**	***MAX***	***MAX***	***MAX***	***MAX***	***MAX***
Air flow	m³/h	330	515	735	890	1395	*325*	*505*	*720*	*875*	*1365*
Cooling total emission	kW	1.61	2.97	3.99	4.98	6.36	*1.88*	*3.19*	*4.54*	*5.34*	*7.14*
Cooling sensible emission	kW	1.3	2.28	3.11	3.84	5.2	*1.44*	*2.41*	*3.41*	*4.03*	*5.63*
Heating	kW	2.13	3.74	4.95	6.09	8.69	*2.37*	*3.91*	*5.6*	*6.51*	*9.39*
Δp Cooling	kPa	6.9	28.9	19	32.6	22.2	*14.8*	*16.1*	*33*	*25.6*	*20.8*
Δp Heating	kPa	5.7	23.9	15.7	26.8	18.5	*12.6*	*13.5*	*26.9*	*21*	*17*
Fan (High speed)	W	20.5	25.0	32.0	41.0	99.0	*20.5*	*25.0*	*32.0*	*41.0*	*99.0*
Fan (Low speed)	W	7.0	6.5	7.5	9.0	16.0	*7.0*	*6.5*	*7.5*	*9.0*	*16.0*
Sound power Lw (Medium speed)	dB(A)	41	42	44	48	55	*41*	*42*	*44*	*48*	*55*
Sound pressure Lp (High speed)	dB(A)*	42	42	45	48	55	*42*	*42*	*45*	*48*	*55*
Sound pressure Lp (Medium speed)	dB(A)*	32	33	35	39	46	*32*	*33*	*35*	*39*	*46*
Sound pressure Lp (Low speed)	dB(A)*	21	21	24	28	35	*21*	*21*	*24*	*28*	*35*

* 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 CRT–ECM

Fan Coil Units with tangential fan and inverter board

Carisma Sabiana CRT–ECM. 2 pipes unit.

The following standard rating conditions are used:

COOLING (summer mode) Entering air temperature + 27°C d.b., + 19°C w.b. Water temperature + 7/12°C

HEATING (winter mode) Entering air temperature + 20°C Entering water temperature + 50°C Water flow rate as for the cooling conditions

Figures at high speed

MODEL		CRT–ECM 13	CRT–ECM 23	CRT–ECM 33	CRT–ECM 53	CRT–ECM 73
Inverter Power		10	10	10	10	10
Speed		**MAX**	**MAX**	**MAX**	**MAX**	**MAX**
Air flow	m³/h	240	305	450	675	900
Cooling total emission	kW	0.99	1.41	2.38	3.49	4.67
Cooling sensible emission	kW	0.86	1.15	1.85	2.74	3.65
Heating	kW	1.48	1.96	3.12	4.63	6.06
Δp Cooling	kPa	2.2	5.2	19.7	15.0	29.1
Δp Heating	kPa	1.8	4.2	16.0	12.1	24.0
Fan (High speed)	W	10.0	11.5	16.0	26.0	38.0
Fan (Low speed)	W	4.0	4.5	5.0	6.0	7.0
Sound power Lw (Medium speed)	dB(A)	39	43	42	46	48
Sound pressure Lp (High speed)	dB(A)*	39	40	40	44	47
Sound pressure Lp (Medium speed)	dB(A)*	30	34	33	37	39
Sound pressure Lp (Low speed)	dB(A)*	20	24	24	26	28

* 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.

***CRC–ECM** version:*

- *5 sizes: from 115 to 1395 m³/h*
- *1 battery: 3 or 4 rows*
- *2 batteries: 3 or 4 rows (cooling) and 1 or 2 rows (heating)*
- *5 versions: MV, MO-MVB, IV-IO*

***CRT–ECM** version:*

- *5 sizes: from 95 to 900 m³/h*
- *1 battery: 3 rows*
- *2 batteries: 3 rows (cooling) and 1 row (heating)*
- *5 versions: MV, MO-MVB, IV-IO*

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 230-240V and frequency of 50-60Hz.

Construction CRYSTALL:

The CRYSTALL Sabiana electrostatic filter is built of extruded profiles in aluminium alloy and has got a very resistant structure.
It takes up practically no valuable room space.
It fits neatly into the bottom of the fan coils which only means that the casing has to be raised slightly.
The positioning of the filter allows for easy and efficient maintenance.
It can be cleaned very easily under running water and has an almost unlimited life.
The construction of the unit using the fan convector instead of having its own inbuilt fan makes it extremely competitively priced when compared to separately mounted filters.
When the heating or cooling systems are switched off, the unit can still be used just as an air purifier.

Electronic Filter Crystall

The CRYSTALL electronic 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, air pollutants such as cigarette smoke, dust, 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.

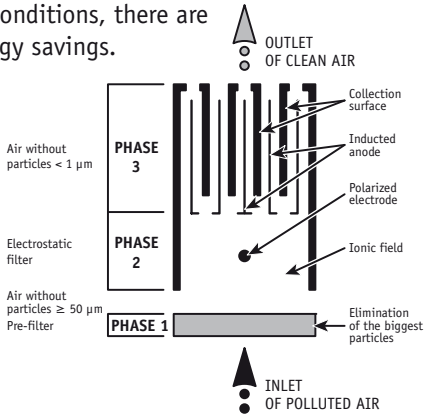
Operating principle of the Crystall Sabiana electronic filter

The air is sucked in and first passes a mechanical prefilter, which keeps 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 fleld 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, inducted magnetic field ***(Phase 3).***

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



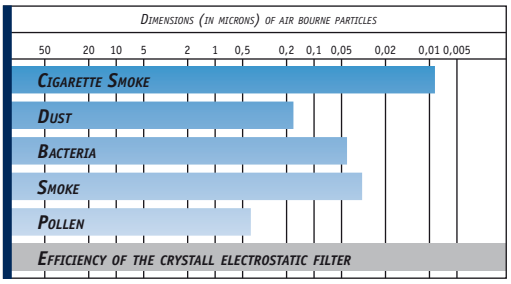
Heating, cooling, heating + purification, cooling + purification, purification

The CRYSTALL SABIANA electrostatic air filter improves the air quality of any room. The filter which is fitted to a Carisma fan convector can remove particles even smaller then 0.01 micron. It is more than 90% efficient and has a very low power cosumption.

External air flow recommended according to ASHRAE standard 62-1981 for area ventilation

Energy saving example.

- *Meetings Rooms.*
- *With 6 people present.*
- *Some of whom are smokers.*
- *Fresh air intake according to ASHRAE 6x63=378 m^3/h*
- *If the fresh air is taken through the CRYSTALL electrostatic filter the air that has to be introduced from outside is only 6x12,6=75,6 m^3/h.*



Type of area	100% external air ventilation (with smokers) in m^3/h per person	Minimum amount of external air with filtration plant (no smokers) in m^3/h per person
Meeting room	63	12.6
Recreation areas	63	12.6
Industrial areas	63	18
Hospitals	63	12.6
Schools	45	9
Shops	45	9
Offices	36	9

Construction CRYSTALL FLEX SYSTEM:

The system consists of:

- a duct of adjustable length;
- a Femec active electronic plate filter;
- an electronic filter control device;
- a high voltage cable;
- a double louvre grid.

Electronic Filter Crystall Flex System

Crystall Flex System is an innovative electronic filter system that can be easily installed downstream of the fan coils designed for horizontal concealed installation. The system minimizes the indoor diffusion of various types of polluting agents found in the ducts of air conditioning systems.
The system is intended for a variety of environments such as schools, hospitals and care homes, surgeries, hotels and all other places where indoor air quality can and should be improved.
The Crystall Flex System is an efficient, reliable and user-friendly product.
Its running costs are extremely low: it does not need to be replaced and can be cleaned and sanitized using commonplace detergents without fear of compromising efficiency and durability.
The filter unit can also be fitted on existing systems without need for significant alterations.

Maestro

High Pressure Fan Coil Units

The MAESTRO Fan Coil Units are for concealed installation and connection to a duct system.
They supply a consistent air flow with static pressure up to 160 Pa.
The MAESTRO Fan Coil Units are manufactured in 5 sizes for hot water supply and chilled water supply.

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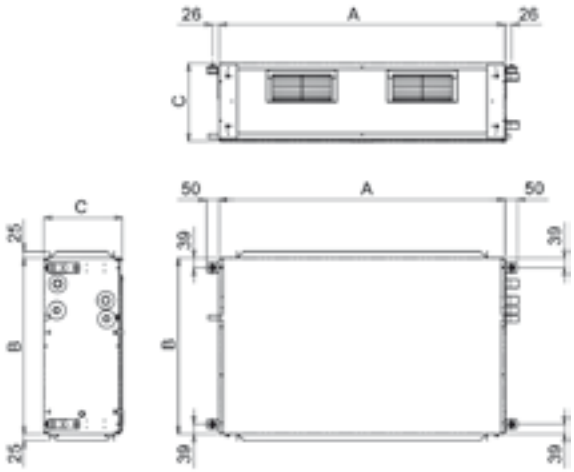

MOD.	MT 1	MT 2	MT 3	MT 4	MT 5
A	1113	1113	1113	1445	1445
B	698	698	698	853	853
C	310	310	360	360	435

Construction MAESTRO:

The casing consists of self-supporting panels of hot dip galvanized steel, which are completely insulated with a 3 mm thick thermoacoustic, flame retardant lining.
The fan section consists of centrifugal fans in galvanized steel with one or two impellers and a directly coupled, single phase, three speed motor, 230V/50 Hz.
The heat exchanger is constructed in 3/8" dia expanded copper tubes with aluminium fins with a pitch of 2.1 mm.
The heat exchanger is mounted in a galvanized steel carrying frame.
The coils are supplied with 3 or 4 rows and with 1 or 2 rows for the additional coil.

Technical characteristics

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 + 7/12°C

HEATING (winter mode) — Entering air temperature + 20°C; Entering water temperature + 50°C; Water flow rate as for the cooling conditions

MODEL		MT 14			MT 24			MT 34			MT 44			MT 54		
Speed		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Air flow	m^3/h	850	1005	1180	1255	1390	1515	1615	1825	2130	1720	2140	2500	2450	3000	3365
Available pressure	Pa	35	50	60	35	50	60	35	50	60	35	50	60	35	50	60
Cooling total emission	kW	4.54	5.06	5.59	6.79	7.26	7.65	8.81	9.53	10.5	10.08	11.67	12.89	13.49	15.39	16.53
Cooling sensible emission	kW	3.59	4.07	4.58	5.28	5.71	6.07	6.82	7.46	8.36	7.65	9.03	10.13	10.45	12.15	13.21
Heating	kW	6.41	7.25	8.13	9.34	10.11	10.7	12	13.2	14.8	13.4	15.9	17.91	18.5	21.54	23.4
Δp Cooling	kPa	4.3	5.2	6.2	9.9	11.2	12.2	13.3	15.4	18.3	9.8	12.7	15.3	9.5	12.0	13.8
Δp Heating	kPa	3.6	4.4	5.3	8.3	9.4	10.3	11.3	13.0	15.5	8.3	10.7	12.9	8.0	10.2	11.7
Fan	W	125	160	205	240	260	290	340	390	460	440	500	580	680	820	960
Sound power level outlet	dB(A)	53	57	62	61	63	66	59	63	65	60	64	67	63	69	72
Sound power level inlet + radiated	dB(A)	55	59	63	63	66	69	62	65	68	64	67	69	67	72	75
Sound pressure level outlet	dB(A)*	44	48	53	52	54	57	50	54	56	51	55	58	54	60	63
Sound pressure level inlet + radiated	dB(A)*	46	50	54	54	57	60	53	56	59	55	58	60	58	63	66
Plenum code		9034200			9034200			9034220			9034230			9034240		

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 + 7/12°C

HEATING (winter mode) — Entering air temperature + 20°C; Entering water temperature + 70/60°C

MODEL		MT 14 + 1			MT 24 + 1			MT 34 + 1			MT 44 + 1			MT 54 + 1		
Speed		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Air flow	m^3/h	810	955	1120	1190	1325	1435	1535	1735	2023	1635	2035	2375	2330	2850	3200
Available pressure	Pa	35	50	60	35	50	60	35	50	60	35	50	60	35	50	60
Cooling total emission	kW	4.39	4.89	5.42	6.56	7.02	7.41	8.52	9.22	10.18	9.72	11.28	12.48	13.04	14.89	16.01
Cooling sensible emission	kW	3.45	3.91	4.41	5.08	5.49	5.84	6.56	7.19	8.05	7.36	8.69	9.75	10.05	11.70	12.72
Heating	kW	3.97	4.40	4.75	5.57	5.92	6.21	7.02	7.54	8.10	8.25	9.46	10.36	11.25	12.72	13.36
Δp Cooling	kPa	4.0	4.8	5.8	9.3	10.5	11.6	12.6	14.6	17.4	9.2	12.1	14.5	9.0	11.4	13.0
Δp Heating	kPa	8.6	10.3	11.9	17.3	19.3	21.0	11.6	13.1	14.9	17.2	22.1	25.9	17.9	22.4	24.4
Fan	W	125	160	205	240	260	290	340	390	460	440	500	580	680	820	960
Sound power level outlet	dB(A)	53	57	62	61	63	66	59	63	65	60	64	67	63	69	72
Sound power level inlet + radiated	dB(A)	55	59	63	63	66	69	62	65	68	64	67	69	67	72	75
Sound pressure level outlet	dB(A)*	44	48	53	52	54	57	50	54	56	51	55	58	54	60	63
Sound pressure level inlet + radiated	dB(A)*	46	50	54	54	57	60	53	56	59	55	58	60	58	63	66
Plenum code		9034200			9034200			9034220			9034230			9034240		

* 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.

High Pressure Fan Coil Units Carisma CRS

Construction CRS:

- Casing: made from galvanized steel with closed cell insulation.
- Fan assembly: the fans have aluminium or plastic material 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 always-on 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.
- Heat exchange coil: it is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process. The main coil and the eventual additional coil have two 1/2 inch BSP internal connections. The coils are supplied with 3 or 4 rows and with 1 or 2 rows for the additional coil.

The Fan Coil Units are for concealed installation and connection to a small duct system.

They supply a consistent air flow with static pressure up to 80 Pa.

The Fan Coil Units are manufactured in 4 sizes for hot water supply and chilled water supply.

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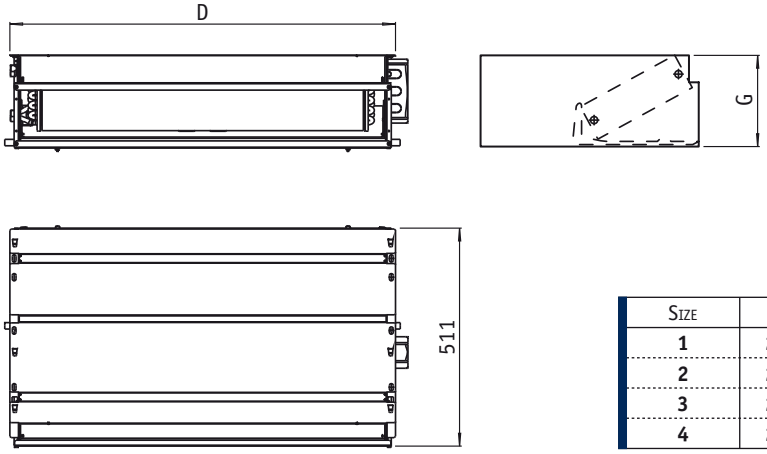

Size	G	D
1	218	689
2	248	904
3	248	1119
4	248	1570

Technical characteristics

CarismaSabiana CRS. 2 pipes unit. The following standard rating conditions are used:

COOLING (summer mode) Entering air temperature + 27°C d.b., + 19°C w.b. Water temperature + 7/12°C

HEATING (winter mode) Entering air temperature + 20°C Entering water temperature + 50°C Water flow rate as for the cooling conditions

Figures at high speed

CRS MODEL		CRS 13	CRS 23	CRS 33	CRS 43	*CRS 14*	*CRS 24*	*CRS 34*	*CRS 44*
Air flow	m^3/h	310	540	930	1200	*310*	*540*	*930*	*1200*
Available pressure	Pa	60	60	65	60	*60*	*60*	*65*	*60*
Cooling total emission	kW	1.91	3.24	5.09	7.05	*2.12*	*3.59*	*5.49*	*7.37*
Cooling sensible emission	kW	1.45	2.49	4.03	5.47	*1.57*	*2.68*	*4.25*	*5.62*
Heating	kW	2.38	3.97	6.58	8.84	*2.58*	*4.38*	*7.08*	*9.39*
Δp Cooling	kPa	12.8	12.8	14.6	12.2	*7.9*	*21.9*	*12.9*	*15.5*
Δp Heating	kPa	10.7	10.5	12.3	10.3	*6.6*	*18.0*	*10.6*	*15.1*
Fan	W	63	110	190	210	*63*	*110*	*190*	*210*
Sound power outlet	dB(A)	50	51	57	58	*50*	*51*	*57*	*58*
Sound power inlet + radiated	dB(A)	57	57	63	64	*57*	*57*	*63*	*64*
Sound pressure outlet	dB(A)*	41	42	48	49	*41*	*42*	*48*	*49*
Sound pressure inlet + radiated	dB(A)*	48	48	54	55	*48*	*48*	*54*	*55*
Plenum code		9066363	9069222	9066368	9069224	*9066363*	*9069222*	*9066368*	*9069224*

* 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.

Carisma CRS–ECM High Pressure Fan Coils Units with inverter board

The innovative brushless and sensorless type synchronous electronic motor with permanent magnets, is 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 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.

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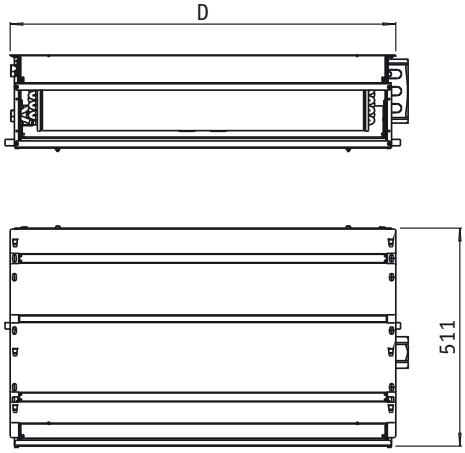
The Fan Coil Units are for concealed installation and connection to a small duct system.
They supply a consistent air flow with static pressure up to 80 Pa.
The Fan Coil Units are manufactured in 3 sizes for hot water supply and chilled water supply.



Size	G	D
1	218	689
2	248	904
3	248	1119

Technical characteristics

Carisma Sabiana CRS–ECM. 2 pipes unit. The following standard rating conditions are used:

COOLING (summer mode) Entering air temperature + 27°C d.b., + 19°C w.b. Water temperature + 7/12°C

HEATING (winter mode) Entering air temperature + 20°C Entering water temperature + 50°C Water flow rate as for the cooling conditions

Figures at high speed

MODEL		CRS–ECM 13	CRS–ECM 23	CRS–ECM 33	*CRS–ECM 14*	*CRS–ECM 24*	*CRS–ECM 34*
Inverter Power		9	8	8.5	*9*	*8*	*8.5*
Air flow	m^3/h	325	560	950	*325*	*560*	*950*
Available pressure	Pa	65	65	65	*65*	*65*	*65*
Cooling total emission	kW	1.98	3.33	5.16	*2.19*	*3.70*	*5.58*
Cooling sensible emission	kW	1.51	2.57	4.10	*1.64*	*2.77*	*4.32*
Heating	kW	2.48	4.10	6.68	*2.69*	*4.53*	*7.21*
Δp Cooling	kPa	13.7	13.4	15.0	*8.5*	*23.0*	*13.3*
Δp Heating	kPa	11.3	11.1	12.3	*7.0*	*19.0*	*10.9*
Fan (High speed)	W	43	64	102	*43*	*64*	*102*
Fan (Low speed)	W	24	30	50	*24*	*30*	*50*
Sound power outlet	dB(A)	52	52	56	*52*	*52*	*56*
Sound power inlet + radiated	dB(A)	58	58	63	*58*	*58*	*63*
Sound pressure outlet	dB(A)*	43	43	47	*43*	*43*	*47*
Sound pressure inlet + radiated	dB(A)*	49	49	54	*49*	*49*	*54*
Plenum code		9066363	9069222	9066368	*9066363*	*9069222*	*9066368*

* 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.

Construction CRS–ECM:

- Casing: made from galvanized steel with closed cell insulation.
- Fan assembly: the fans have aluminium or plastic material 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.
- 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 230-240V and frequency of 50-60Hz.
- Heat exchange coil:
  it is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process.
  The main coil and the eventual additional coil have two 1/2 inch BSP internal connections.
  The coils are supplied with 3 or 4 rows and with 1 or 2 rows for the additional coil.

Cassette Fan Coils

SkyStar

The attractive design and the high quality of all the components allow the SkyStar cassette fan coil to perfectly fit in all the enviroments, offering the quietest operational mode.

The 4 smaller sizes are designed to fit into false ceiling standard 600x600mm modules. The 3 bigger sizes have a 800x800mm dimension that offers the best solution in terms of silent operation and price/performance ratio for these high capacity units. The SkyStar range offers great installation flexibility and very easy maintenance.

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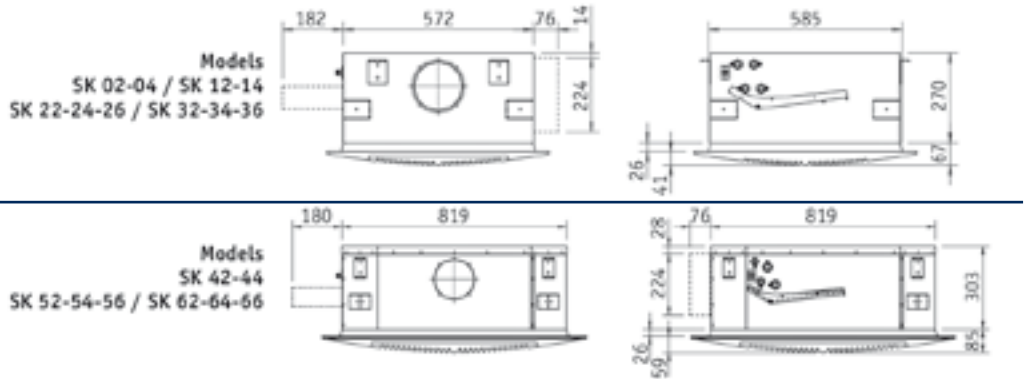
The acces to all the most important components is from the bottom side without the need to remove any parts of the false ceiling. Every unit can have fresh air intake, the air distribution is in four directions and a remote air diffuser can be connected to the unit. The condensate pump is integral with the unit and is easiliy accessible. The range is made of 6 sizes. Every size can be supplied with 2 or 4 pipes and with 2 or 3 way 230 V, ON-OFF valves. The valve installation is mandatory. Different electronic remote controls are available. The TCS-DI model with micro-processor automatically selects the fan speed in accordance to the difference between room and set temperature and can control up to 10 units. The infra-red remote control is also available.

Construction SKYSTAR:

- Air inlet and air diffuser: internal grid, air diffuser and louvres are made of synthetic material of white color (RAL 9003). Other RAL colours available on request.
- Internal casing: made of galvanized steel with thermal and acoustic polyethylene insulation, fire-retardant rating B2 to DIN 4102.
- Fan assembly: extremely quiet radial flow fan with self-lubrificating ball bearings. External rotor motor 230V / 50Hz, class 1 insulation, with integrated thermal contact for motor protection, wired to the terminal on the outside of the casing.
- Condensate collection tray: polystyrene foam condensate tray, shaped in order to optimize the air diffusion, fire retardant rating B2 to DIN 4102.
- Air filter: synthetic washable filter, class G1 (EN 779) easily removable.
- Condensate pump: two step float switch, integral with the unit and wired to the terminal on the outside of the casing, 650 mm maximum head.
- Valve set: two or three way valves, ON-OFF operation with thermostatic actuator.



Technical characteristics

The following standard rating conditions are used:

2-pipe units

COOLING (summer mode)
Entering air temperature + 27°C d.b., + 19°C w.b.
Water temperature + 7/12°C

HEATING (winter mode)
Entering air temperature + 20°C
Water temperature + 50°C
Water flow rate as for the cooling conditions

4-pipe units

COOLING (summer mode)
Entering air temperature + 27°C d.b., + 19°C w.b.
Water temperature + 7/12°C

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

Figures at high speed

		2-Pipe units							*4-Pipe units*										
MODEL		**SK 02**	**SK 12**	**SK 22**	**SK 32**	**SK 42**	**SK 52**	**SK 62**	**SK 04**	**SK 14**	**SK 24**	**SK 26**	**SK 34**	**SK 36**	**SK 44**	**SK 54**	**SK 56**	**SK 64**	**SK 66**
Air flow	m^3/h	610	520	710	880	1140	1500	1820	610	520	710	710	880	880	1140	1500	1500	1820	1820
Cooling total emission	kW	1.98	2.68	4.33	5.02	6.16	9.51	11.10	2.33	2.70	3.34	3.93	3.81	4.53	6.34	7.71	8.77	8.89	10.20
Cooling sensible emission	kW	1.64	2.04	3.18	3.74	4.59	6.48	8.25	1.90	1.98	2.56	2.95	2.97	3.46	4.69	5.83	6.49	6.84	7.68
Δp Cooling	kPa	10.0	9.7	15.1	19.7	21.6	26.9	35.6	13.5	8.8	13.4	10.5	17.0	14.0	18.9	26.9	25.0	34.7	32.0
Heating	kW	2.64	3.35	5.23	6.17	7.77	10.71	14.00	3.03	3.46	4.40	3.35	4.95	3.79	9.10	11.00	8.56	12.70	9.80
Δp Heating	kPa	9.0	8.2	11.4	17.7	15.1	23.0	30.6	14.5	10.8	16.6	9.0	20.5	11.0	21.4	29.9	15.3	38.8	19.5
Sound power	dB(A)	49	45	53	59	48	53	58	49	45	53	53	59	59	48	53	53	58	58
Sound pressure (High speed)	dB(A)*	40	36	44	50	39	44	49	40	36	44	44	50	50	39	44	44	49	49
Sound pressure (Medium speed)	dB(A)*	31	31	36	40	31	31	39	31	31	36	36	40	40	31	31	31	39	39
Sound pressure (Low speed)	dB(A)*	24	24	24	32	24	25	25	24	24	24	24	32	32	24	25	25	25	25
Fan	W	57	44	68	90	77	120	170	57	44	68	68	90	90	77	120	120	170	170
	A	0.27	0.20	0.32	0.45	0.36	0.53	0.74	0.27	0.20	0.32	0.32	0.45	0.45	0.36	0.53	0.53	0.74	0.74
Dimensions	mm	575x575x275				820x820x303			575x575x275						820x820x303				

* 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.

SkyStar ECM

Cassette Fan Coils with inverter board

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

The air flow can be varied **continuously** by means of a 1-10 V signal generated by Sabiana controls or by independent contollers. In the first case, an electronic board installed on the unit interfaces with specifically developed wall-mounted or infra-red controls, whereas in the second case programmable controllers should be used with a 1-10 V output.

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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 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.

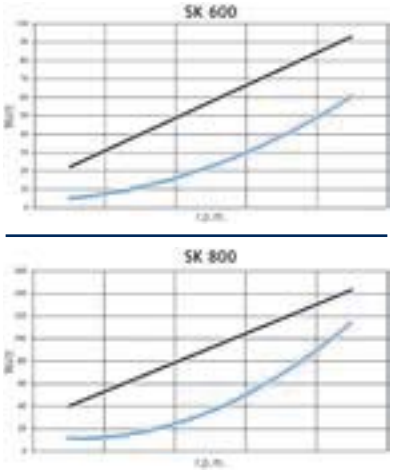
It consumes less because:

- *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.*

Motor Absorption



SK — *SK-ECM*

Construction SKYSTAR ECM:

- Fan assembly: extremely quiet radial flow fan with self-lubrificating ball bearings.
- 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 230-240V and frequency of 50-60Hz.

Technical characteristics

The following standard rating conditions are used:

2-pipe units

COOLING (summer mode)
Entering air temperature + 27°C d.b., + 19°C w.b.
Water temperature + 7/12°C

HEATING (winter mode)
Entering air temperature + 20°C
Water temperature + 50°C
Water flow rate as for the cooling conditions

4-pipe units

COOLING (summer mode)
Entering air temperature + 27°C d.b., + 19°C w.b.
Water temperature + 7/12°C

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

Figures at high speed

		2-Pipe units					*4-Pipe units*				
MODEL		**SK-ECM 12**	**SK-ECM 22**	**SK-ECM 32**	**SK-ECM 42**	**SK-ECM 52**	**SK-ECM 14**	**SK-ECM 26**	**SK-ECM 36**	**SK-ECM 44**	**SK-ECM 56**
Air flow	m³/h	535	710	880	1165	1770	535	710	880	1165	1770
Cooling total emission	kW	2,75	4,33	5,02	6,33	10,75	2,77	3,93	4,53	6,51	9,87
Cooling sensible emission	kW	2,09	3,18	3,74	4,72	7,94	2,08	2,95	3,46	4,83	7,4
Δp Cooling	kPa	10,1	15,1	19,7	22,7	33,6	9,5	10,5	13,1	19,8	30,1
Heating	kW	3,44	5,24	6,2	8,01	12,73	3,62	3,35	3,79	9,36	9,51
Δp Heating	kPa	8,7	13,1	17,7	19,5	28,8	11,7	9	11	22,5	18
Sound power	dB(A)	47	54	60	48	57	47	54	60	48	57
Sound pressure (High speed)	dB(A)*	38	45	51	39	48	38	45	51	39	48
Sound pressure (Medium speed)	dB(A)*	30	34	41	30	38	30	34	41	30	38
Sound pressure (Low speed)	dB(A)*	24	24	28	24	25	24	24	28	24	25
Fan	W	16	31	62	33	108	16	31	62	33	108
Dimensions	mm	575x575x275			820x820x303		575x575x275			820x820x303	

Condensate pump absorption: 8 W

* 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.

One Way Cassette Fan Coils — Coanda

Construction COANDA:

- Diffuser with intake grill: in prepainted metal sheet in RAL 9003 colour with intake grill that can be opened for inspection and maintenance of the filter.
- Casing: made from galvanized steel with closed cell insulation.
- Fan assembly: the centrifugal fans have aluminium or plastic blades directly keyed on the electric motor with six speeds, three of which are connected, 230V/1/ 50Hz.
- Heat exchange coil: made from copper tubes (3/8") and aluminium fins on a galvanized steel frame. The coils are supplied with 3 or 4 rows and with 1 or 2 rows for the additional coil.

- ***ECM 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 230-240V and frequency of 50-60Hz.

Thanks to the particular air handling section, Carisma Coanda cassette 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.

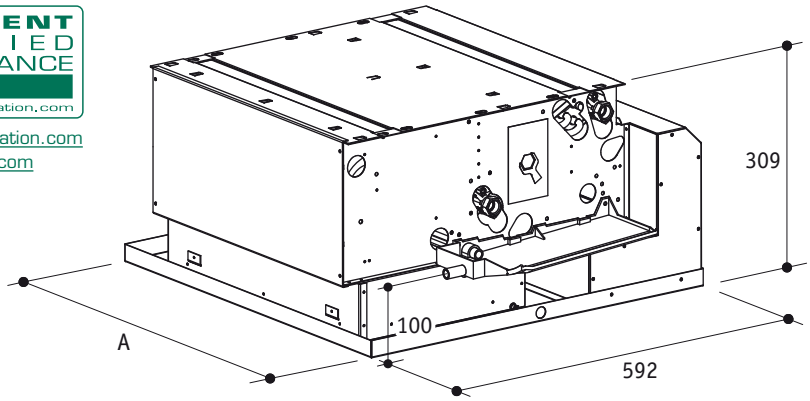
The "coanda" effect creates excellent circulation of the air inside the room.

Available with ECM **innovative brushless electronic motor** controlled by an **inverter** board designed and developed in Italy for great saving of electric energy.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

www.eurovent-certification.com
www.certiflash.com

Size	A
1	592
2	970
3	1192



Technical characteristics

CarismaSabiana COANDA. 2 pipes unit. The following standard rating conditions are used:

COOLING (summer mode) Entering air temperature + 27°C d.b., + 19°C w.b. Water temperature + 7/12°C

HEATING (winter mode) Entering air temperature + 20°C Entering water temperature + 50°C Water flow rate as for the cooling conditions

Figures at high speed

COANDA MODEL		CCN 13	CCN 23	CCN 33	*CCN 14*	*CCN 24*	*CCN 34*
Air flow	m³/h	280	380	540	*280*	*380*	*620*
Cooling total emission	kW	1.50	2.37	3.34	*1.74*	*2.57*	*4.02*
Cooling sensible emission	kW	1.18	1.77	2.51	*1.31*	*1.88*	*2.98*
Heating	kW	1.93	2.86	4.02	*2.10*	*3.12*	*4.77*
Δp Cooling	kPa	6.1	7.6	16.2	*12.9*	*12.1*	*15.5*
Δp Heating	kPa	4.9	6.3	13.4	*10.7*	*10.2*	*12.6*
Fan	W	49	44	59	*49*	*44*	*72*
Sound power Lw (Medium speed)	dB(A)	41	36	46	*41*	*36*	*52*
Sound pressure Lp (High speed)	dB(A)*	43	39	43	*43*	*39*	*46*
Sound pressure Lp (Medium speed)	dB(A)*	32	27	37	*32*	*27*	*43*
Sound pressure Lp (Low speed)	dB(A)*	26	24	26	*26*	*24*	*32*

CarismaSabiana COANDA–ECM. 2 pipes unit. The following standard rating conditions are used:

COOLING (summer mode) Entering air temperature + 27°C d.b., + 19°C w.b. Water temperature + 7/12°C

HEATING (winter mode) Entering air temperature + 20°C Entering water temperature + 50°C Water flow rate as for the cooling conditions

Figures at high speed

COANDA–ECM MODEL		CCN–ECM 13	CCN–ECM 23	CCN–ECM 33	*CCN–ECM 14*	*CCN–ECM 24*	*CCN–ECM 34*
Inverter Power		10	10	10	*10*	*10*	*10*
Speed		**MAX**	**MAX**	**MAX**	***MAX***	***MAX***	***MAX***
Air flow	m³/h	295	540	620	*295*	*540*	*620*
Cooling total emission	kW	1.56	3.16	3.75	*1.81*	*3.50*	*4.02*
Cooling sensible emission	kW	1.24	2.41	2.83	*1.38*	*2.60*	*2.98*
Heating	kW	2.02	3.85	4.54	*2.20*	*4.32*	*4.78*
Δp Cooling	kPa	6.5	12.6	19.8	*13.9*	*20.8*	*15.5*
Δp Heating	kPa	5.3	10.4	16.6	*11.6*	*17.1*	*13.0*
Fan (High speed)	W	29	37	42	*29*	*37*	*42*
Fan (Low speed)	W	8	8	10	*8*	*8*	*10*
Sound power Lw (Medium speed)	dB(A)	46	46	48	*46*	*46*	*48*
Sound pressure Lp (High speed)	dB(A)*	46	47	49	*46*	*47*	*49*
Sound pressure Lp (Medium speed)	dB(A)*	37	37	39	*37*	*37*	*39*
Sound pressure Lp (Low speed)	dB(A)*	26	25	27	*26*	*25*	*27*

* 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.

Ocean

Modular Fan Coil Units

Available with Crystall electrostatic filter section

The Ocean Modular Fan Coil Units are constructed in four basic versions in order to satisfy any installation requirements and thanks to their compact size they can fit in narrow areas or false ceilings.

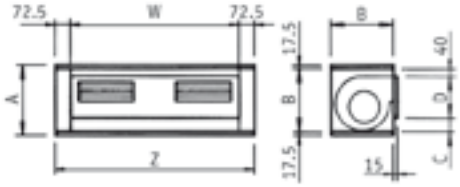
By the use of the same modular components, 6 vertical and 9 horizontal versions can be obtained with air flows ranging from 600 to 5300 m³/h.

It is possible to mount either 2, 3, 4 or 6 row heat exchangers for water, or a 4 row heat exchanger for direct expansion.

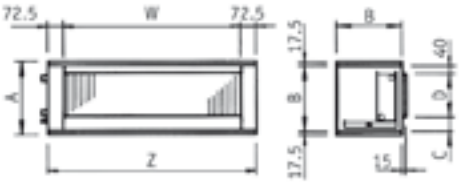
Thanks to its modular construction the unit can be easily disassembled and re-assembled on site and the air flow direction can be changed according to the specific needs.

OCEAN dimensions

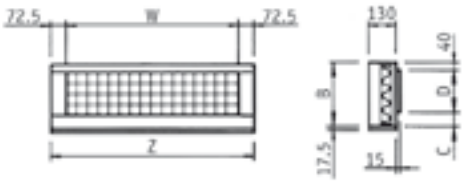
FAN SECTION *SVE*



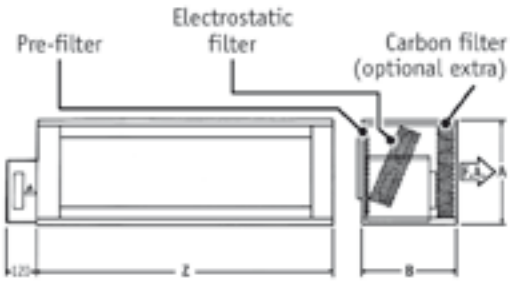
BATTERY SECTION *SBO*



FILTER SECTION *SFS*



Crystall electrostatic filter + Carbon filter



MOD.	A	B	C	D	W	Z	Electrostatic Filter	Electrostatic Filter N°
1	335	300	65	195	805	950	840x112	2
2	415	380	40	300	805	950	840x112	3
3	515	480	40	400	805	950	840x112	4
4	515	480	40	400	1355	1500	1390x112	4

Technical characteristics

The following standard rating conditions are used:

COOLING (summer mode)
Entering air temperature + 26°C b.s., R.H. 55%
Water temperature + 7/12°C

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

With 4 row battery

MODEL		1			2			3			4		
Speed		1	2	3	1	2	3	1	2	3	1	2	3
Air flow	m³/h	600	1000	1400	1000	1550	2100	1500	2100	3000	2400	3800	5300
Cooling total emission	kW	3.70	5.20	6.40	5.80	7.90	9.60	9.80	12.20	15.20	15.00	20.30	24.80
Cooling sensible emission	kW	2.60	3.70	4.70	4.10	5.80	7.30	6.50	8.50	11.00	9.90	14.00	17.70
Heating	kW	7.40	11.40	15.00	12.20	17.60	22.40	18.30	23.80	32.00	30.20	43.20	55.10
Δp Cooling	kPa	2.2	4.6	7.5	2.6	4.8	7.4	9.0	14.5	24.3	7.0	13.1	13.1
Δp Heating	kPa	1.6	3.5	5.7	2.0	3.7	5.6	6.9	11.0	18.5	5.3	10.0	15.4
Sound pressure	dB(A)*	45	51	55	50	55	60	53	56	61	55	61	65
Fan max	A	2.0			2.8			4.4			6.0		

* Sound pressure in open field conditions at 1 metre from front of unit.

Construction OCEAN:

The casing consists of self-supporting panels of hot dip galvanized, prepainted steel, which are completely insulated with a 20 mm thick thermoacoustic, flame retardant lining.
The fan section consists of centrifugal fans in galvanized steel with two impellers and a directly coupled, single phase, three speed motor, 230V/50Hz with permanently installed condensor, insulation class F, power 185 W.
The heat exchanger is constructed in 3/8" dia expanded copper tubes with aluminium fins with a pitch of 2.1 mm.
The steel headers have 3/4" male connections and an extra tapping for an air vent.
The heat exchanger is mounted in a galvanized steel carrying frame.

Accessories:

- Suspension Brackets
- Condensate collection tray
- Humidification section
- Supplementary electric element
- Recessed manual speed control switch
- Variable speed drive
- Manual speed control and thermostat
- Outlet box with circular diffusers
- Inlet box with damper
- Outlet grid with double louvres

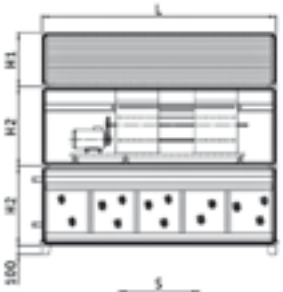
Air Handling Units

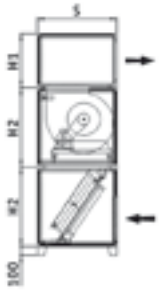
Zeus

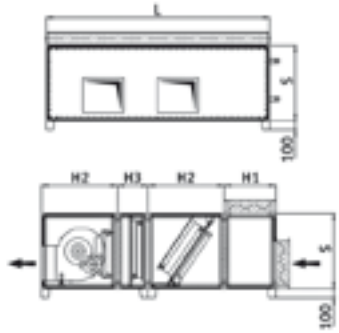
The ZEUS Sabiana Air Handling Units have been designed and developed to meet heating and air conditioning needs for industrial, commercial and residential installations.
The range is available in 6 vertical models and 6 horizontal models with an air flow varying from 5,000 to 25,000 m³/h. Heating outputs from 32 to 260 kW, cooling from 17 to 160 kW.

Construction ZEUS:

- Casing: aluminium holding frame and double skin sandwich panels 25 mm thick. Indoor panel made of galvanized steel, outdoor panel made of galvanized and prepainted steel in light blue colour.
- Insulation: non-inflammable mineral wool insulation (fire class A1 in accordance to DIN 4102) density 90 kg/m³, thickness 25mm.
- Fan: galvanized centrifugal fan with double exausting outlet, statically and dynamically balanced.
- Transmission: driving pulley with varying diameter.
- Motor: three phase form B3 UNEL-MEC 400V 50Hz protection IP 55, class F.
- Battery: copper tubes, aluminium fins, painted steel collectors with 2, 3, 4 or 6 rows.
- Filter: pleated cells type class G3, regenerating synthetic, zinc-coated frame, thickness 48 mm - front extraction.







Emission

E.A.T. 20°C, W.T. 70/60°C

MODEL	Air flow m³/h	Rows	Emission kW	Leaving air temperature °C	Water flow l/h
50	4400	2	32.35	41.9	2828
		3	42.37	48.6	3704
		4	49.77	53.6	4350
80	7400	2	54.38	41.9	4753
		3	71.22	48.6	6226
		4	83.66	53.6	7312
110	10400	2	76.13	41.9	6655
		3	99.70	48.6	8716
		4	117.12	53.6	10236
140	14000	2	98.93	41.2	8688
		3	129.05	47.5	11317
		4	151.28	52.7	13266
200	20200	2	142.40	41.1	12506
		3	186.88	47.5	16389
		4	219.08	52.7	19211
250	24500	2	171.61	41.3	15071
		3	226.34	47.7	19849
		4	263.21	52.8	23082

E.A.T. 27°C, R.H. 50%
W.T. 7/12°C

MODEL	Air flow m³/h	Rows	Total emission kW	Sensible emission kW	Water flow l/h
50	4400	3	17.04	14.00	2931
		4	20.82	16.40	3581
		6	26.68	19.36	2656
80	7400	3	28.93	23.77	4976
		4	35.52	27.98	6109
		6	45.47	33.00	7821
110	10400	3	39.98	32.85	6876
		4	50.46	39.36	8680
		6	63.85	46.01	10982
140	14000	3	54.40	41.60	9333
		4	72.10	51.10	12364
		6	92.50	62.70	15830
200	20200	3	78.78	60.24	13516
		4	104.41	74.00	17913
		6	133.95	90.80	22982
250	24500	3	101.58	75.50	17428
		4	126.45	89.62	21695
		6	160.94	109.09	27612

Dimension and coil header Diameter

MODEL	L	S	H1	H2	H3	Ø Headers			
						2R	3R	4R	6R
50	1250	740	490	740	350	1"	1"	1"	1 1/4"
80	1900	740	490	740	350	1"	1 1/4"	1 1/4"	1 1/2"
110	1900	870	590	870	350	1 1/4"	1 1/2"	1 1/2"	1 1/2"
140	2560	870	590	870	350	1 1/2"	1 1/2"	1 1/2"	1 1/2"
200	2580	1150	810	1150	400	1 1/2"	2"	2"	2"
250	2780	1250	810	1270	450	2"	2"	2 1/2"	2 1/2"

Vulcan Pro

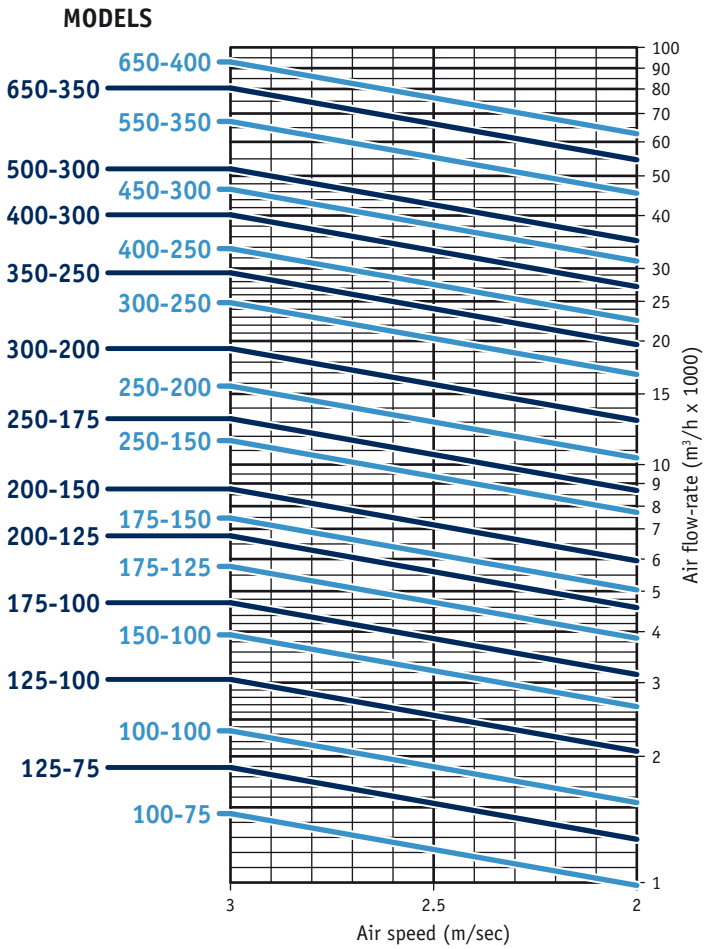
Air Handling Units

The VULCAN PRO air handling units are available in 23 different sizes, in order to provide an air flow range from 1.450 m³/h to 78.800 m³/h.
They can satisfy any need of air conditioning, filtration, humidification and heat recovery for any kind of enviroment: commercial, sport, residential, medical and industrial.

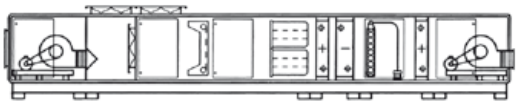
Construction VULCAN PRO:

The Vulcan Pro Air Handling Units are made with holding aluminium frame and with double skin sandwich panels.
Thermo-acoustic insulation 35mm or 50mm thick, made of polyurethane foam or high density mineral wool.

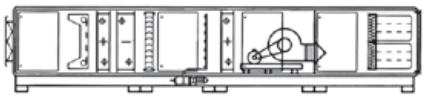
Selection diagrams



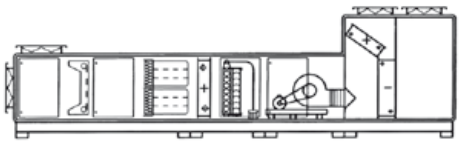
Unit Combinations



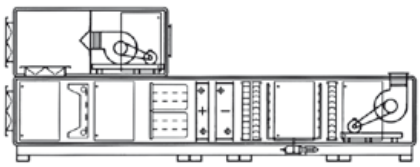
Supply and return air plant.



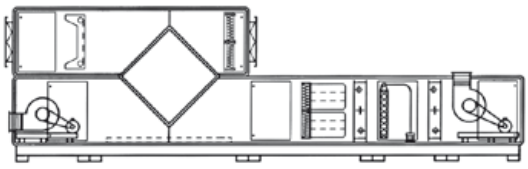
Fresh air plant.



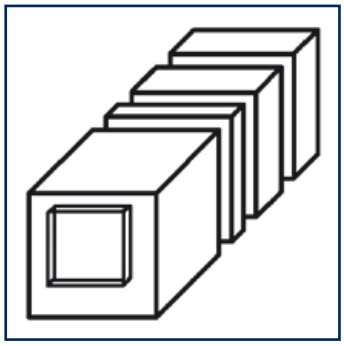
Multi-zone section.



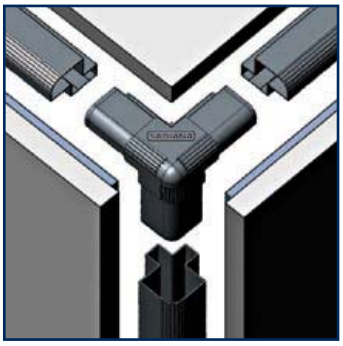
Double deck units.



Energy recovery units.



Modular panel construction, with no thermal or acoustic bridges



Strong construction and excellent thermal and acoustic insulation.

DUCK STRIP RADIANT PANELS: AEROSPATIALE TOULOUSE
NEW **AIRBUS A380** PRODUCTION PLANT.
INSTALLATION HEIGHT: 40 m

DUCK STRIP RADIANT PANELS: AEROSPATIALE TOULOUSE
NEW **AIRBUS A380** PRODUCTION PLANT.
INSTALLATION HEIGHT: 40 m

PULSAR RADIANT PANELS

SABIANA
ENVIRONMENTAL COMFORT