

Product Range



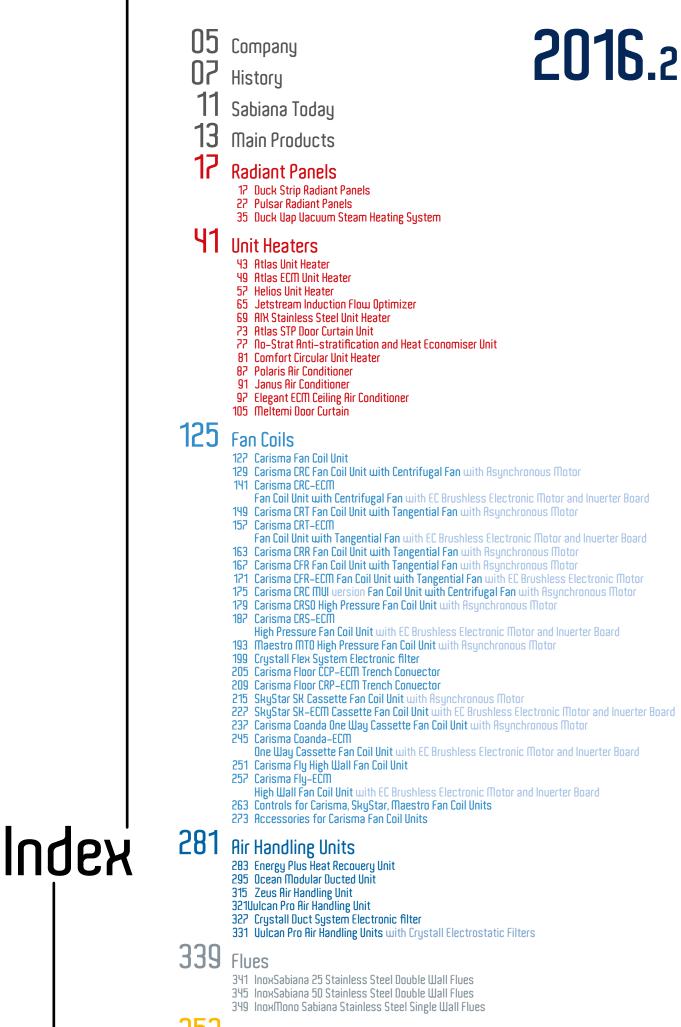








for 80 Years a Leading Position in the Air Conditioning



Other Products

353 Electra 90 / ElectraMatic Electric Unit Heater
 357 FSE Electric Fan Conuector
 361 Primula Miniconuector

Dabiana is the Italian company that has been designing, producing and selling innovative heating and air conditioning products for over 80 years. All of the products use the best existing natural liquid that has always stood side-by-side with humans in all of their activities: **Water**.

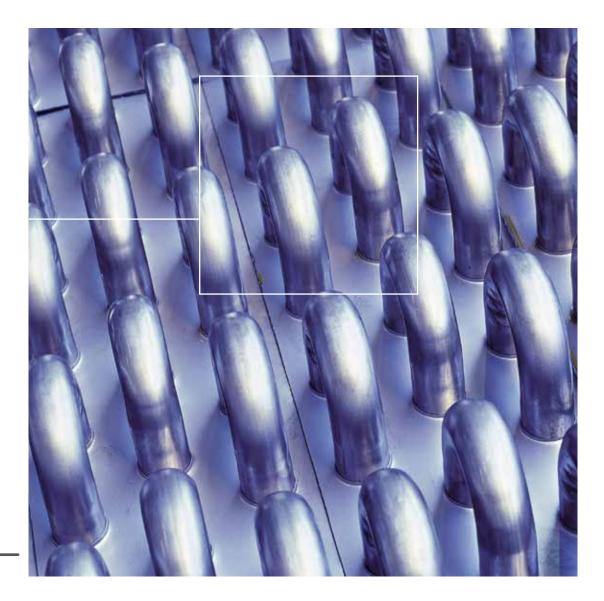
In fact, by heating and cooling water, the climate of any work environment can be controlled with great precision and a high degree of comfort.

Sabiana has paid a great deal of attention to the **NOISE IEUEI** of its products (it was the first Italian company to introduce radiant ceiling panels in industrial environments in 1973, providing heating without any noise), their **Electrical CONSUMPTION** (it was the first company to introduce Cassette fan coil units with electronic motors and low power consumption on the Italian market in 2009) and indoor **air quality** (it was the first company to adopt a patented electronic filter on a wide range of air conditioners in 1993).

Company



Consistent with the great Italian ability to produce products with **Sophisticated design**, Sabiana offers products that can be harmoniously added to any building's architectural structure.



The main product lines are:

- Radiant panels
- Unit heaters
- Fan Coils
- Air handling units
- Stainless steel flues
- Electric units

Uver 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 there are 45 Sales Agents who can recommend the Sabiana product that best fits your climate control needs. Dabiana was founded in **1929** by Franco Binaghi and Benvenuto Anatrella. From Lombardy, passionate about mechanics and a man at home in the workshop, Binaghi sensed Anatrella's great entrepreneurial and commercial talents as soon as he moved from Tuscany to the Lombard capital. Starting with a handshake, like so many other Italian companies, 83 years later the heirs of the two founders are still passionately involved in this partnership. The objective remains, as it was then, to produce and sell reliable products that improve comfort levels in all work environments.

The first electrical unit heater was offered in **1935**, and right after the second world war, production started on hot water unit heaters which, with 7 different types, still heat and sometimes air condition thousand of establishments throughout the world today.

At the beginning **of the POs**, when the first worldwide energy crisis occurred, an innovative heating system was proposed for the Alfa Romeo factory in Arese which used radiant panels installed 12 meters high.

History



Office in Via Aprica - the 40s

Ithough not yet in production, Sabiana accepted the order and delivered the first 10 km of radiant panels to the customer's great satisfaction, with another 20 km to follow in subsequent years.



Jince then, over 30.000 systems in all types of environments (small, medium, large industry, shopping centres, aircraft hangars, sports and recreational centres and zootechnical facilities) are proof of the product's reliability, with new and highly innovative applications, like the new plant in Toulouse (France) where the most prestigious European product is built, the new Airbus A380 that seats 800.

Towards the end **of the Pos**, with the first demands for office air conditioning, the heat convector, designed and sold mainly for domestic use, was gradually replaced by what would later become one of the most popular air conditioning systems and the most important Sabiana product: the fan coil. These were the years when Italian design was starting to take hold through-out the world and it was this period that saw the beginning of the company's collaboration with one of the leading industrial designers and winner of the Compasso d'Oro (Golden Compass), Lorenzo Bonfanti. Together we designed the Helios unit heater, which is still a symbol of how a highly elegant product aimed at heating industrial environments can be built. With the Futura fan coil, Sabiana, moving away from traditional style patterns, drew the attention not only of the most important designers, but also of many architects, which have always been strict regarding any air-conditioning apparatus. The beautiful design along with the traditional reliability and quietness of Sabiana products, led to the company's success in the ever more competitive air conditioning market, where large international groups operate.

Since 1995, every Sabiana fan coil can be installed with an innovative electrostatic filter named Crystall, patented throughout the world by Luigi Bontempi, which considerably improves air quality in work environments, capturing numerous pollutants from the air such as cigarette smoke, dusts, fibres or microbiological substances such as bacteria or fungi. The filter was then extended to other products. There were numerous technical meetings organized by Sabiana dedicated to internal air quality (IAQ) and they are still receiving a large amount of interest for the prevalence of the problem and the solutions proposed.

During **the 90s** there were two other strategic decisions made for the company's future: the choice to produce flues in stainless steel which soon allowed Sabiana to become one of the most important companies in the Italian market and the completion of the range of water-based air conditioning products with the start of production of a complete series of air handling units, some in series and some upon specific customer request. They are very flexible units, with high technical quality, capable of satisfying the ever-increasing need for environmental comfort.

History



Sabiana manufacturing plant in Corbetta

March 2004.

Mostra-Convegno Expo Comfort in Milan: Sabiana presents another jewel in their crown: the SkyStar Cassette fan coil unit, the result of great technical and stylistic research aimed at offering cutting edge products in terms of performance, quietness and control flexibility. The intake grille and air diffuser has an absolutely innovative appearance and is capable of ensuring excellent performance thanks to extensive computer and laboratory tests. It is the definitive statement in the fan coil industry and places the company at the pinnacle of European production.

May 2009.

Sabiana is the first company in the world to introduce Cassette fan coil units on the market with inverter, permanent magnet, sensorless and brushless synchronous electronic motors. Electrical consumption decreases by over 50% and continuous adjustment of the air flow rate improves the precision of the ambient temperature control, at the same time reducing the average noise level. Market success was immediate and within two years resulted in 10% of sales having this technology.



March 2010.

Mostra-Convegno Expo Comfort in Milan: Sabiana presents the new Carisma fan coil unit with a beautiful design that gives continuity to the style proposed with the Futura product as its noteworthy successor but with a more current and modern shape. It is produced in the new factory in Magenta (MI) that was recently inaugurated and dedicated to fan coil units, an extremely modern structure with over 9,000 m².

Its performance in relation to electrical consumption and noise levels is particularly interesting as they are among the lowest in the market.

March 2011.

All Sabiana fan coil units are also offered with inverter electronic motors, the only one capable of satisfying the class A requirements that were just introduced by Eurovent, the main European performance certification society.

November 2012.

We start the production of the new Carisma Fly high wall fan coil.

Designed with simple and essential lines, it is entirely manufactured in the Sabiana plants and it is supplied in several versions including with EC low power consumption motors.



July 2014.

From 1 July, Sabiana has become a member of **AFG Group, Arbonia-Forster-Holding AG,** an international

group, technological leader in the production of construction materials.

The company has now the chance to play a bigger role in the international market.

February 2015.

At the beginning of 2015 is launched the new range of Meltemi door curtains, fully designed and manufactured in Sabiana. With new and improved design and performance in accordance with European Regulation N° 327/2011 - ERP 2015, the Meltemi door curtain is proposed as a break-through for the protection of entrances such as doors and gates for industrial, commercial, sport halls and supermarkets, shops etc... oday Sabiana is an Italian company that directly employs more than 180 people, with three factories near Milan for an overall 50.000 m² of surface area and turnouer of more than 80 Million Euros, over 50% of which is in foreign markets.

In the last 5 years, on average, 6% of turnover was directed towards investments in new production technologies and in research and development. 85% of the electrical energy consumed is produced by three photovoltaic systems for an overall 1.36 Megawatts, perfectly integrated in the architectural structure of the buildings.

- Sabiana Today



B design and testing and inspection laboratories, besides allowing for the creation of reliable products that are long-lasting, also allows for rapid development of new products and 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.





arge 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 carefully choosing every component in the air conditioning system, show their approval for the Sabiana brand.

Iso 9001 certified since **1996** with all products in compliance with European standards and directives and, where existing, with quality and control certifications for declared performance, Sabiana is faithful to the deep-rooted promise of its two founders: we will always be beside you, those who design or distribute or install our products every day, to help you professionally and so that you can take priceless satisfaction in having done a good job.

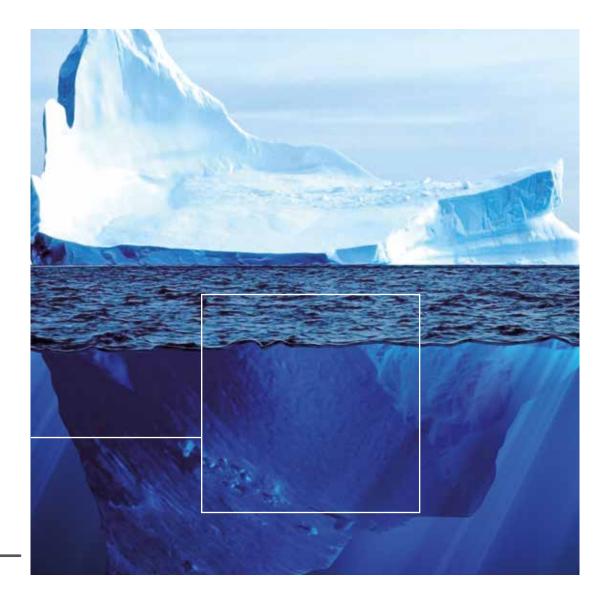
Since 1973, over **30.000 installations** of Sabiana **radiant panels** in every work and education environment, are proof of the quality of this system, which allows absolutely silent heating and cooling, with no air movement, with a uniform temperature throughout the environment, with no danger of fire and great energy savings. There are two main product lines, one for industrial environments and the other 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.

Main Products



Seven product lines, three of which are also suitable for cooling, allow every designer to find the ideal solution for any system, taking advantage of the experience and range of a leading company in Europe.



Since 1980 Sabiana has been producing fan coils featuring a beautiful design and very low noise levels and electrical consumption, in line with the great attention currently towards 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).

Cight product lines are available with a wide range of accessories and controls, among which 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.

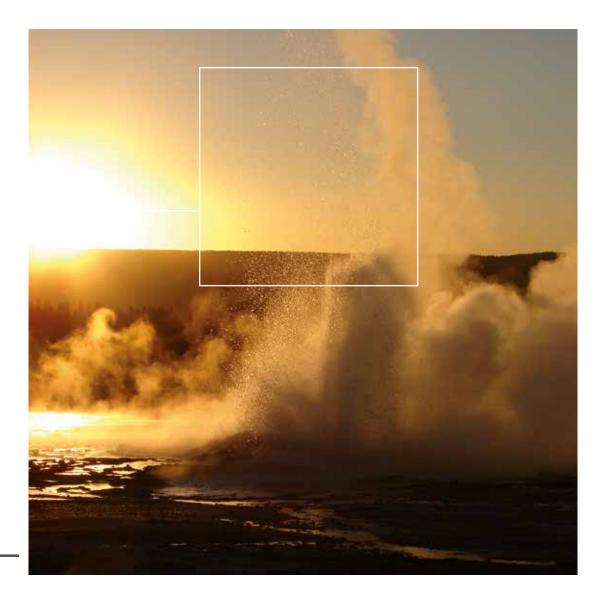
The Sabiana fan coil is one of the reference products in Europe and is constantly growing in a particularly competitive market.

Since 1990 Sabiana has been producing **air handling units** with an air flow of 1.000 to 80.000 m³/h, made to measure according to individual customer specifications using efficient configuration and selection software.

here are three product lines with single and double panels able to satisfy air ventilation and climate control needs for practically all environments were people work and live, with interesting technical solutions capable of reducing a building's energy consumption (heat recovery units, inverter-driven motors, electronic filters).

Main Products





Since 1985 Sabiana has been selling single or double wall stainless steel flues for removing gas from boilers.

There are **8 product lines**, **3 of which are made of plastic material**, suitable for the latest generation of condensing boilers.



Duck Strip Radiant Panels

Sabiana is the leading European manufactuer in the design, production and sale of **radiant panels** operating on hot water, high temperature hot water and steam.

Since 1971, **OUER 30.000 installations** have been made in all types of environments (small, medium and large industry, shopping centres, aircraft hangars, sporting and recreation facilities, zootechnical facilities), demonstrating the soundness of the product and in new and highly innovative applications, such as the increasingly widespread air-conditioning of production areas that guarantees maximum comfort and consistent productivity all year round, even in the hotter summer months.



eating by radiation means absolute silence, no forced movement of the air, uniform temperatures throughout the environment, and no risk of fire. It means energy savings, as people, the walls



and the floor are heated directly, while the air is only heated indirectly, with consequent minimum stratification of the heat. It means constant operation over time and no routine maintenance on the product, with the peace of mind that, year after year, at the start of each season, this product will continue to provide incomparable comfort.

different models are available in 2 standard colours and other colours upon request. The heating emission values have been certified by the leading European certification laboratory, the University of Stuttgart in Germany. The values have been obtained by applying the harmonised European standard EN 14037.



Duck Strip Radiant Panels

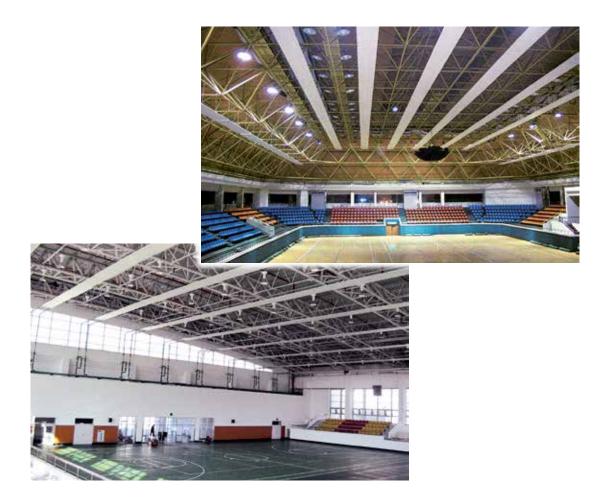
Technical specifications:

Quality steel radiant panel, 0.8 mm thick, cold formed by mechanical forming procedure. The 300, 600, 900 and 1200 mm wide panels in 6 and 4 m lengths (3 and 5 m upon request), have semicircular self-locking sockets, spaced 100 or 150 mm apart depending on the models that are used to hold the pipes that carry the hot water. • Steel pipes pressed

into the semicircular sockets on the panel.

| Standard Uersion: | panels fitted with 1.5mm thick pipes, |
|-------------------|---|
| | outside diameter 1/2", made by electric welding |
| | from high-quality cold rolled steel strips. |
| | The pipes are electronically tested by the manufacturer. |
| | The standard version panels are suitable |
| | for operating pressures up to 10 bars |
| | and maximum hot water temperature up to 120°C. |
| Special Uersion: | panels fitted with 2.35mm thick |
| | seamless pipes (or with equivalent features), |
| | outside diameter 1/2", suitable |
| | for use in systems with operating pressures |
| | up to 16 bars and high temperature hot water temperatures |
| | from 120°C to 180°C. |
| | |

The pipes have belled ends at one side to ease the longitudinal connection of the strips with welding. Alternatively, the pipes can be supplied without belled ends for connections using pressfittings.



- Angle brackets for hanging the panel.
- First header and end header, made by connecting the various pipes in parallel into welded headers, factory welded and tested to the required operating pressure.
- Sized fibreglass insulation (thickness 30-50 mm) protected at the top by aluminium sheet (*). Other thickness or configurations upon request.
- Side edging strips made from pre-painted plate sections, to retain the edges of the insulation (*).
- Pre-painted retaining clips (one each metre) to hold the insulation (*).
- Shaped and painted make-up joints, with fastening bars, to cover the joint areas (*).
- Protection with special phosphate de-greasing procedure and epoxy polyester coat, dried in a furnace at 180°C (paint thick ≅ 80 µm).
 Colour RAL 9002 (light grey) or RAL 9016 (white). Other RAL colours upon request.
 The treatment is not suitable for the outdoor installation of the radiant panels.
- Reaction to fire class: A1.
- Emission of the radiant surface $\mathbf{E} = 0,96$.
- The painting complies to the European Standard 76/769/EEC.

(*) with separate packaging.

Characteristics of the insulation

Description

Mineral wool insulation treated with heat setting resins, coated on the outside face with 25 micron aluminium foil.

Reaction to fire

Class A1 according to EN 13501-1 standards.

| Thickness | 30 mm | 50 mm |
|---|----------------------|----------------------|
| Thermal conductivity according to UNI CTI 7745 and UNI FA 112 standard | 0,037 W/mK | 0,037 W/mK |
| Density | 14 kg/m ³ | 14 kg/m ³ |
| Resistance | 0,81 m²K/W | 1,35 m²K/W |

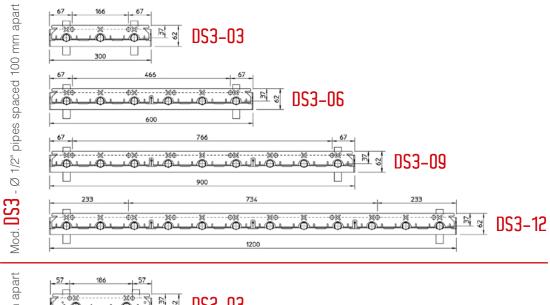
Technical specifications

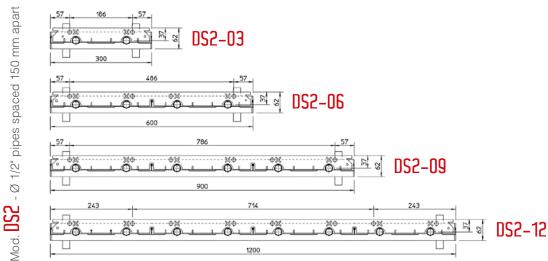
The totally inorganic nature of the mineral wool ensures the following characteristics: maintenance of the performance over time, resistance to parasites and rodents, not hygroscopic, rot-proof.



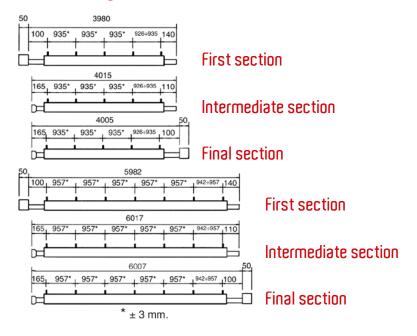
Models and Dimensions

Modular widths



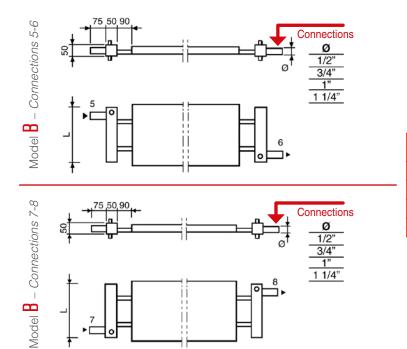


Modular lengths (odd lengths are available on request)

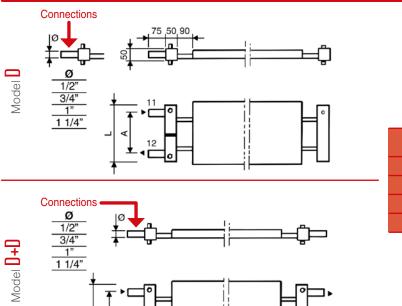


Inck Stri

Headers and Connections



| MODEL | L |
|-------|------|
| 03 | 300 |
| 06 | 600 |
| 09 | 900 |
| 12 | 1200 |



| MODEL | L | А |
|-------|------|------|
| 03 | 300 | 200 |
| 06 | 600 | 500 |
| 09 | 900 | 800 |
| 12 | 1200 | 1100 |
| | | |

D and D+D headers:

4

Distance between the connectionsmod. 03 = 200 mmmod. 06 = 500 mmmod. 09 = 800 mmmod. 12 = 1100 mm

D and D+D headers are not suitable for high temperature hot water or steam.

Header "D" should be used with hot water supply

for strips up to 50 m (with slow and gradual opening of the water valve).

For strips longer than 50 m a special "D" header

is recommended, please contact Sabiana Technical Department.



Weight and Water content

| MODEL | STANDARD | SPECIAL | WATER C | ONTENT | VOLUME ONE HEADER | WEIGHT FULL HEADER |
|--------|----------|---------|-----------------|----------------|-------------------|--------------------|
| MODEL | kg/m | kg/m | Standard I/m | Special I/m | I | kg |
| DS2-03 | 4,6 | 5,6 | 0,53 | 0,43 | 0,63 | 1,9 |
| DS2-06 | 9,2 | 11,2 | 1,05 | 0,87 | 1,27 | 3,7 |
| DS2-09 | 13,8 | 16,8 | 1,58 | 1,30 | 1,90 | 5,1 |
| DS2-12 | 18,4 | 22,4 | 2,10 | 1,74 | 2,54 | 6,5 |
| DS3-03 | 5,6 | 7,1 | 0,79 | 0,65 | 0,63 | 2,1 |
| DS3-06 | 11,2 | 14,2 | 1,58 | 1,30 | 1,27 | 3,9 |
| DS3-09 | 16,8 | 21,3 | 2,37 | 1,95 | 1,90 | 5,3 |
| DS3-12 | 22,4 | 28,4 | 3,16 | 2,60 | 2,54 | 6,7 |



THERMAL EMISSION OF THE PANELS

Table of thermal emission for each meter of the different models of **radiant panels** in accordance to the European Standard EN 14037

| ∆tm | DS2-03 | DS2-06 | DS2-09 | DS2-12 | ∆tm | DS3-03 | DS3-06 | DS3-09 | DS3-12 |
|------------|------------|---------------|--------------|-------------------|------------|------------|------------|--------------|---------------|
| (K) | W/m | W/m | W/m | W/m | (K) | W/m | W/m | W/m | W/m |
| 20 | 51 | 90 | 126 | 170 | 20 | 59 | 105 | 152 | 194 |
| 22 | 57 | 100 | 141 | 189 | 22 | 66 | 117 | 170 | 217 |
| 24 | 63 | 111 | 155 | 209 | 24 | 73 | 130 | 188 | 241 |
| 26 | 69 | 122 | 171 | 229 | 26 | 80 | 142 | 207 | 265 |
| 28 30 | 75 81 | 133 144 | 186 201 | 250 270 | 28 30 | 88 95 | 155 169 | 226 245 | 289 313 |
| 30 | 87 | 155 | 201 | 291 | 30 | 103 | 182 | 245 | 338 |
| 34 | 93 | 166 | 233 | 312 | 34 | 110 | 195 | 284 | 363 |
| 36 | 100 | 177 | 249 | 333 | 36 | 118 | 209 | 304 | 388 |
| 38 | 106 | 189 | 265 | 355 | 38 | 126 | 223 | 324 | 413 |
| 40 | 112 | 200 | 281 | 376 | 40 | 134 | 237 | 344 | 439 |
| 42 | 119 | 212 | 297 | 398 | 42 | 141 | 251 | 365 | 465 |
| 44 | 125 | 223 | 314 | 420 | 44 | 149 | 265 | 385 | 491 |
| 46 48 | 132 139 | 235 247 | 330 347 | 442 464 | 46 48 | 157 165 | 279 293 | 406 | 518 544 |
| 40 50 | 139 | 259 | 364 | 404 486 | 40 50 | 174 | 308 | 427 | 571 |
| 52 | 143 | 271 | 380 | 509 | 52 | 182 | 323 | 469 | 598 |
| 54 | 159 | 283 | 397 | 531 | 54 | 190 | 337 | 491 | 625 |
| 55 | 162 | 289 | 406 | 543 | 55 | 194 | 345 | 501 | 639 |
| 56 | 165 | 295 | 415 | 554 | 56 | 198 | 352 | 512 | 652 |
| 58 | 172 | 307 | 432 | 577 | 58 | 207 | 367 | 534 | 680 |
| 60 | 179 | 319 | 449 | 600 | 60 | 215 | 382 | 556 | 707 |
| 62 | 186 | 331 | 466 | 623 | 62 | 224 | 397 | 578 | 735 |
| 64 | 193 | 344 | 484 | 646 | 64 | 232 | 412 | 600 | 763 |
| 65 66 | 196 200 | 350 356 | 493 501 | <u>657</u> 669 | 65 66 | 236 241 | 420 427 | 611 622 | 777 791 |
| 68 | 200 | 368 | 519 | 692 | 68 | 241 | 427 | 644 | 820 |
| 70 | 214 | 381 | 537 | 716 | 70 | 258 | 458 | 667 | 848 |
| 72 | 221 | 394 | 555 | 739 | 72 | 267 | 473 | 689 | 877 |
| 74 | 228 | 406 | 572 | 763 | 74 | 275 | 489 | 712 | 905 |
| 76 | 235 | 419 | 590 | 787 | 76 | 284 | 504 | 735 | 934 |
| 78 | 242 | 432 | 608 | 810 | 78 | 293 | 520 | 757 | 963 |
| 80 | 249 | 444 | 627 | 834 | 80 | 302 | 536 | 780 | 992 |
| 82 | 256 | 457 | 645 | 858 | 82 | 311 | 552 | 803 | 1021 |
| 84 86 | 263 271 | 470 483 | 663 681 | 883 907 | 84 86 | 320 329 | 568 584 | 827 850 | 1051 1080 |
| 88 | 278 | 405 | 700 | 931 | 88 | 338 | 600 | 873 | 1110 |
| 90 | 285 | 509 | 718 | 955 | 90 | 347 | 616 | 897 | 1139 |
| 92 | 292 | 522 | 737 | 980 | 92 | 356 | 632 | 920 | 1169 |
| 94 | 300 | 535 | 755 | 1004 | 94 | 365 | 648 | 944 | 1199 |
| 96 | 307 | 548 | 774 | 1029 | 96 | 374 | 664 | 968 | 1229 |
| 98 | 314 | 561 | 792 | 1054 | 98 | 383 | 681 | 992 | 1259 |
| 100 | 322 | 575 | 811 | 1078 | 100 | 393 | 697 | 1016 | 1290 |
| 102 104 | 329 336 | 588 601 | 830 849 | 1103 1128 | 102 104 | 402 411 | 714 730 | 1040 1064 | 1320 1351 |
| 104 | 344 | 614 | 868 | 1153 | 104 | 411 | 747 | 1088 | 1381 |
| 108 | 351 | 628 | 887 | 1178 | 108 | 430 | 763 | 1112 | 1412 |
| 110 | 359 | 641 | 906 | 1203 | 110 | 439 | 780 | 1137 | 1443 |
| 112 | 366 | 655 | 925 | 1228 | 112 | 449 | 797 | 1161 | 1474 |
| 114 | 374 | 668 | 944 | 1253 | 114 | 458 | 813 | 1186 | 1505 |
| 116 | 381 | 682 | 963 | 1279 | 116 | 468 | 830 | 1210 | 1536 |
| 118 | 389 | 695 | 983 | 1304 | 118 | 477 | 847 | 1235 | 1567 |
| 120 122 | 396 404 | 709 723 | 1002 1021 | 1330 1355 | 120 122 | 487 496 | 864 881 | 1260 1284 | 1598 1629 |
| 122 | 404 | 736 | 1021 | 1335 | 122 | 490 506 | 898 | 1204 | 1661 |
| 124 | 412 | 750 | 1041 | 1406 | 124 | 515 | 915 | 1334 | 1692 |
| 128 | 427 | 764 | 1080 | 1432 | 128 | 525 | 932 | 1359 | 1724 |
| 130 | 435 | 777 | 1099 | 1458 | 130 | 535 | 950 | 1384 | 1756 |
| 132 | 442 | 791 | 1119 | 1483 | 132 | 544 | 967 | 1410 | 1788 |
| 134 | 450 | 805 | 1138 | 1509 | 134 | 554 | 984 | 1435 | 1819 |
| 136 | 458 | 819 | 1158 | 1535 | 136 | 564 | 1001 | 1460 | 1851 |
| 138 | 465 | 833 | 1178 | 1561 | 138 | 574 | 1019 | 1486 | 1883 |
| 140 | 473 | 847 | 1198 | 1587 | 140 | 583 | 1036 | 1511 | 1916 |

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



THERMAL EMISSION OF THE HEADERS

Table of thermal emission of a **couple of headers** of the different models in accordance to the European Standard EN 14037

| ∆tm | DS2-03 | DS2-06 | DS2-09 | DS2-12 | ∆tm | DS3-03 | DS3-06 | DS3-09 | DS3-12 |
|------------|------------|------------|------------|--------------|------------|------------|------------|------------|--------------|
| (K) | W | W | W | W | (K) | W | W | W | W |
| 20 | 29 | 57 | 86 | 108 | 20 | 32 | 57 | 91 | 115 |
| 22 | 33 | 64 | 96 | 121 | 22 | 35 | 64 | 101 | 129 |
| 24 26 | 37 40 | 71 78 | 107 118 | 135 148 | 24 26 | 39 44 | 71 78 | 113 124 | 144 158 |
| 20 | 40 | 86 | 129 | 140 | 20 | 44 | 86 | 135 | 173 |
| 30 | 48 | 93 | 140 | 176 | 30 | 52 | 93 | 147 | 189 |
| 32 | 52 | 101 | 152 | 191 | 32 | 56 | 101 | 158 | 204 |
| 34 | 56 | 109 | 163 | 205 | 34 | 60 | 109 | 170 | 220 |
| 36 38 | 60 64 | 117 125 | 175 187 | 220 235 | 36 38 | 65 69 | 116 124 | 182 194 | 236 252 |
| 40 | 68 | 133 | 199 | 250 | 40 | 74 | 132 | 206 | 268 |
| 42 | 72 | 141 | 211 | 266 | 42 | 78 | 140 | 218 | 285 |
| 44 | 76 | 150 | 224 | 281 | 44 | 83 | 149 | 231 | 301 |
| 46 | 80 | 158 | 236 | 297 | 46 | 87 | 157 | 243 | 318 |
| 48 50 | 85 89 | 167 175 | 249 261 | 313 328 | 48 50 | 92 97 | 165 174 | 256 268 | 335 353 |
| 50 52 | 93 | 184 | 201 | 344 | 50 | 101 | 182 | 200 | 370 |
| 54 | 97 | 193 | 287 | 361 | 54 | 106 | 191 | 294 | 387 |
| 55 | 100 | 197 | 294 | 369 | 55 | 109 | 195 | 301 | 396 |
| 56 | 102 | 202 | 300 | 377 | 56 | 111 | 199 | 307 | 405 |
| 58 | 106 | 211 | 313 | 393 | 58 | 116 | 208 | 320 | 423 |
| 60 62 | 111 115 | 220 229 | 327 340 | 410 427 | 60 62 | 121 126 | 217 226 | 333 346 | 441 459 |
| 62 64 | 115 | 229 | 340 | 427 | 62 64 | 120 | 226 | 346 | 459 |
| 65 | 120 | 242 | 360 | 452 | 65 | 133 | 239 | 366 | 486 |
| 66 | 124 | 247 | 367 | 460 | 66 | 136 | 244 | 373 | 495 |
| 68 | 129 | 256 | 380 | 477 | 68 | 141 | 253 | 386 | 514 |
| 70 | 133 | 266 | 394 | 495 | 70 | 146 | 262 | 400 | 532 |
| 72 | 138 | 275 | 408 | 512 | 72 | 151 | 271 | 414 | 551 |
| 74 76 | 142 147 | 284 294 | 422 436 | 529 547 | 74 76 | 156 161 | 280 289 | 427 441 | 570 588 |
| 78 | 152 | 303 | 450 | 564 | 78 | 167 | 209 | 455 | 607 |
| 80 | 156 | 313 | 464 | 582 | 80 | 172 | 308 | 469 | 627 |
| 82 | 161 | 323 | 478 | 599 | 82 | 177 | 318 | 482 | 646 |
| 84 | 166 | 333 | 492 | 617 | 84 | 182 | 327 | 496 | 665 |
| 86 88 | 171 175 | 342 352 | 507 521 | 635 653 | 86 88 | 188 193 | 337 346 | 510 525 | 685 704 |
| 90 | 175 | 362 | 536 | 671 | | 193 | 356 | 539 | 704 |
| 92 | 185 | 372 | 550 | 689 | 92 | 204 | 365 | 553 | 743 |
| 94 | 190 | 382 | 565 | 708 | 94 | 209 | 375 | 567 | 763 |
| 96 | 195 | 392 | 579 | 726 | 96 | 215 | 385 | 581 | 783 |
| 98 | 200 | 402 | 594 | 745 | 98 | 220 | 395 | 596 | 803 |
| 100 102 | 204 209 | 412 423 | 609 624 | 763 782 | 100 102 | 226 231 | 405 414 | 610 625 | 823 843 |
| 102 | 209 | 423 | 639 | 800 | 102 | 237 | 414 | 639 | 864 |
| 106 | 219 | 443 | 654 | 819 | 106 | 242 | 434 | 654 | 884 |
| 108 | 224 | 454 | 669 | 838 | 108 | 248 | 444 | 669 | 905 |
| 110 | 229 | 464 | 684 | 857 | 110 | 254 | 454 | 683 | 925 |
| 112 114 | 234 239 | 474 485 | 699 714 | 876 895 | 112 114 | 259 265 | 464 475 | 398 713 | 946 966 |
| 114 | 239 | 485 | 714 | 914 | 114 | 200 | 475 | 713 | 966 |
| 118 | 250 | 506 | 745 | 933 | 118 | 276 | 495 | 743 | 1008 |
| 120 | 255 | 517 | 761 | 952 | 120 | 282 | 505 | 757 | 1029 |
| 122 | 260 | 527 | 776 | 972 | 122 | 288 | 516 | 772 | 1050 |
| 124 | 265 | 538 | 792 | 991 | 124 | 294 | 526 | 788 | 1071 |
| 126 128 | 270 275 | 549 560 | 807 823 | 1011 1030 | 126 128 | 299 305 | 536 547 | 803 818 | 1092 1114 |
| 120 | 275 | 570 | 839 | 1050 | 120 | 305 | 557 | 833 | 1114 |
| 132 | 286 | 581 | 854 | 1069 | 130 | 317 | 568 | 848 | 1156 |
| 134 | 291 | 592 | 870 | 1089 | 134 | 323 | 578 | 863 | 1178 |
| 136 | 296 | 603 | 886 | 1109 | 136 | 329 | 589 | 879 | 1199 |
| 138 | 301 | 614 | 902 | 1129 | 138 | 335 | 599 | 894 | 1221 |
| 140 | 307 | 625 | 918 | 1149 | 140 | 340 | 610 | 909 | 1243 |

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

Duck Strip



Pulsar Radiant Panels

The **PULSAR Sabiana** ceiling mounted radiant panels are produced in 4 sizes, with a width of 600 mm and a length between 1.2 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.

he panels feature a very interesting construction: modern welding units, without leaving any visible traces, press the galvanized 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.



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

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

he 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.



Pulsar Radiant Panels

Technical description:

- 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 satin 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.

Pulsar

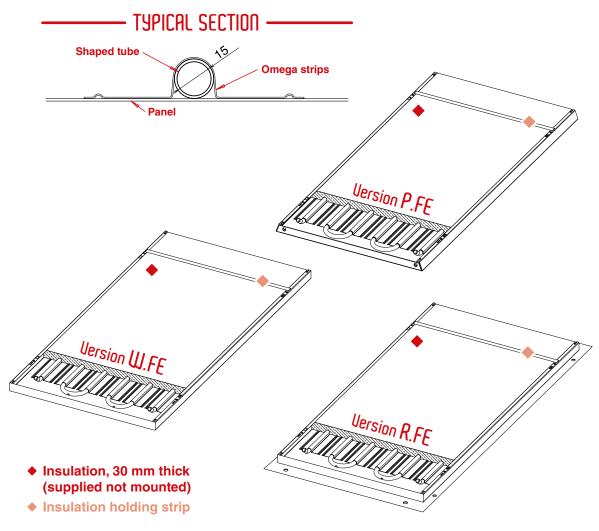
On the panel is fixed a galvanized steel pipe with 15 mm of external diameter, 1.2 mm thick. The galvanized omega strips welded to the panels hold the correct spacing of the tubes and secure the best surface contact between the tube and the panel.

- 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 $\mathcal{E} = 0,96$.
- The radiant panels are supplied with an insulating layer of mineral wool (30 mm thick) protected by an aluminium sheet (25 m



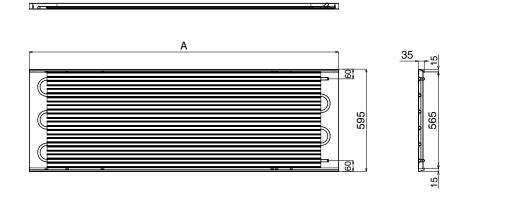
thick) protected by an aluminium sheet (25 micron thick) to be mounted on the top of the panel.The insulation is in Class A1 according to EN 13501-1 standard.

- Thermal conductivity 0,037 W/mK (according to UNI CTI 7745 and UNI FA 112 standard).
- Density 14 kg/m³.
- Thermal resistance 0,81 m²K/W.

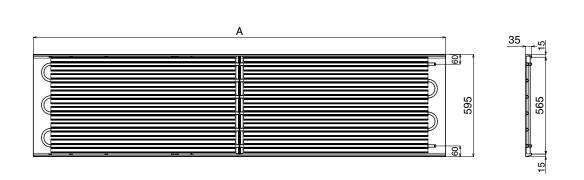


Dimensions, Weight, Water content

Models 1 and 2



Models 3 and 4



3% I

| MODEL | WIDTH | WEIGHT | WATER CONTENT |
|---------------|--------|--------|---------------|
| MUDEL | A (mm) | kg | Litres |
| P.FE 1 | 1195 | 13,8 | 1,3 |
| P.FE 2 | 1795 | 20,7 | 2,0 |
| P.FE 3 | 2395 | 27,6 | 2,8 |
| P.FE 4 | 2995 | 34,5 | 3,5 |
| W.FE 1 | 1234 | 13,8 | 1,3 |
| W.FE 2 | 1858 | 20,7 | 2,0 |
| W.FE 3 | 2482 | 27,6 | 2,8 |
| W.FE 4 | 3106 | 34,5 | 3,5 |



٨.

THERMAL EMISSIONS IN ACCORDANCE WITH THE EUROPEAN STANDARD EN 14037-1

| ∆tm | EMISSION |
|-----|----------|-----|----------|-----|----------|-----|----------|-----|----------|
| °C | 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 |

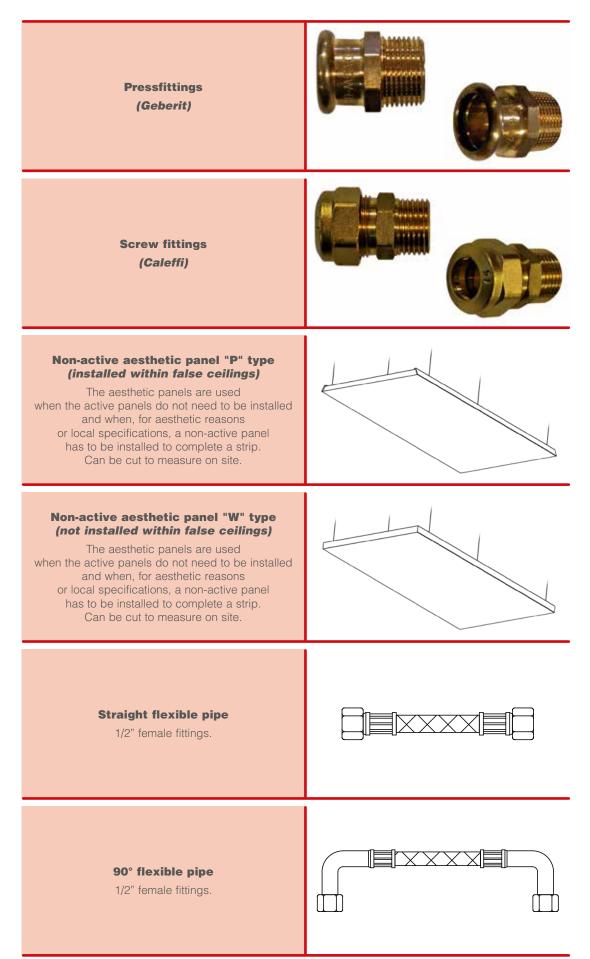
COOLING EMISSIONS IN ACCORDANCE WITH THE EUROPEAN STANDARD EN 14037-4

| ∆tm – | COOLING EMISSION | | | | | | |
|-------|------------------|------------------|--------------------|------------------|--|--|--|
| Δum | WITH INS | SULATION | WITHOUT INSULATION | | | | |
| °C | W/ml | W/m ² | W/ml | W/m ² | | | |
| 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.



Accessories





Accessories



90° / Straight flexible pipe 1/2" female fittings. Hanging systems ا گ λ Δ P.FE WFE

33



Duck Uap Uacuum Steam Heating System

The **Duck Uap** radiant heating panels have been designed to respond to the need to ensure optimum comfort from a radiant system in all industrial environments where a traditional heating plant is not feasible.

Une or more steam generators under vacuum, or VAS, installed in a sheltered location outside, cause the steam to expand inside the suitably modified pipes of the radiant heating panels, with condensate return by gravity. The circuit is closed and sealed, there is no consumption of steam and consequently no need to top up the water.

he vacuum system allows steam to be produced at a maximum temperature of 110°C corresponding to a relative pressure of 0.45 bar (1.45 bar absolute).



he main advantages involve exceptionally uniform temperature in the environment, fast stabilisation of the operating conditions, and a particularly simple and long lasting system with reduced energy consumption (almost no power consumption).

he **Duck Uap** radiant panels are produced in 6 different models, with 2 standard colours, and others upon request. Each model features elements measuring 4 and 6 metres in length (3 and 5 metres upon request). Each element can be easily connected by welding the pipes supplied with belled ends.

he first and last elements are fitted with welded headers and tested in the factory using advanced automated processes.

he 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.



Duck Uap Uacuum Steam Heating System

Technical characteristics of the main components:

• Duck Vap series radiant heating panels:



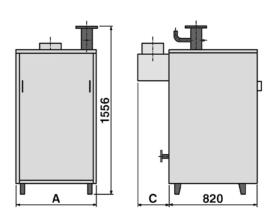
| MODEL | EMISSION |
|---------|-----------------------------|
| MODEL | Ambient temperature 18°C |
| VAP 203 | 304 |
| VAP 206 | 543 |
| VAP 209 | 766 |

| MODEL | EMISSION |
|---------|-----------------------------|
| WUDEL | Ambient temperature 18°C |
| VAP 303 | 374 |
| VAP 306 | 665 |
| VAP 309 | 966 |

Duck Uap

• VAS series steam generators:

| | RATED FLOW-RATE | RATED | MAXIMUM | MAX. STEAM | DIMEN | ISIONS |
|---------------|-----------------|--------|----------|-------------|-------|--------|
| MODEL | Qn Hi | OUTPUT | PRESSURE | TEMPERATURE | А | С |
| | kW | kW | bar | О° | mm | mm |
| VAS 63 | 70 | 63,7 | 0,45 | 110 | 590 | 245 |
| VAS 95 | 105 | 95,5 | 0,45 | 110 | 750 | 295 |
| VAS 143 | 157,5 | 143,3 | 0,45 | 110 | 994 | 320 |





- ASA air venting device:
 - 1) Level sensor
 - 2) Air vent solenoid valve
 - 3) System pressure indicator light
 - 4) Vent in progress indicator light
 - 5) Box for the control equipment
 - 6) Temperature probe
 - **7)** 3/4" gas fitting
- Control panel

with black bulb probe:

- 1) Control unit for wall mounting
- 2) Main on/off switch
- Button with indicator light to signal burner shutdown and reset
- 4) Digital weekly on/off timer
- Digital electronic thermostat with two temperature thresholds, "day" (comfort) and "night" (reduced)



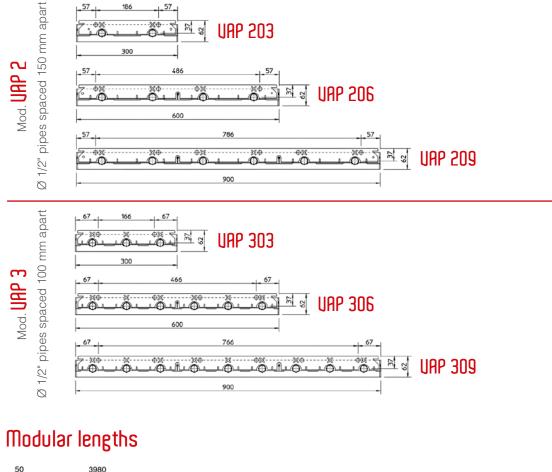


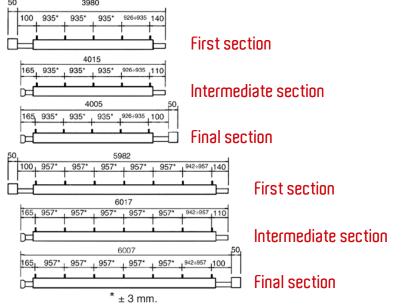


Black bulb probe

Models and Dimensions

Modular widths



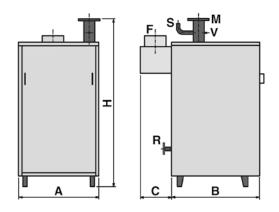


Unit weights

| MODEL | | VAP 203 | VAP 206 | VAP 209 | VAP 303 | VAP 306 | VAP 309 |
|---------------------------|------|---------|---------|---------|---------|---------|---------|
| UNIT WEIGHT | kg/m | 4,6 | 9,2 | 13,8 | 5,6 | 11,2 | 16,8 |
| UNIT WEIGHT FINAL SECTION | kg/m | 5,6 | 11,2 | 16,8 | 7,1 | 14,2 | 21,3 |



VAS series steam generators



| MODEL | | VAS 63 | VAS 95 | VAS 143 |
|-----------------------------|----|-----------|------------|------------|
| Overall dimensions: A | mm | 590 | 750 | 994 |
| В | mm | 820 | 820 | 820 |
| С | mm | 245 | 295 | 320 |
| Н | mm | 1556 | 1556 | 1556 |
| Steam outlet: ØM | | DN65 PN16 | DN100 PN16 | DN100 PN16 |
| Condensate return: ØR | | DN25 PN16 | DN25 PN16 | DN32 PN16 |
| Safety valve attachment: ØS | | M 3/4" G | M 1" G | M 1 1⁄2 G |
| Vacuum valve attachment: ØV | | F 1/4" G | F 1/4" G | F 1/4" G |
| Rated flue diameter: ØF | mm | 180 | 200 | 250 |
| Gas supply attachment | | F 1/2" G | F 1" G | F 1 1⁄4° G |
| Empty weight | kg | 225 | 290 | 385 |
| Water content | lt | 115 | 140 | 180 |

Due to the special constructional characteristics, these steam generators can be configured as modules to achieve higher heat outputs.

THERMAL EMISSION OF THE PANELS

| | CARRIER F | LUID: STEAM AT 110°C (P | = 0,45 bar) |
|---------|----------------------|-------------------------|----------------------|
| MODEL | T room = 16°C | T room = 18°C | T room = 20°C |
| | W/m | W/m | W/m |
| VAP 203 | 312 | 304 | 296 |
| VAP 206 | 556 | 543 | 529 |
| VAP 209 | 785 | 766 | 747 |
| VAP 303 | 383 | 374 | 364 |
| VAP 306 | 680 | 664 | 647 |
| VAP 309 | 991 | 966 | 942 |

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,

Unit Heaters





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.

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.

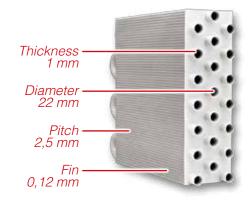
Il range is compliant with the new ERP 2015 Regulation (EU) No. 327/2011 which requires very low electric consumption ratings



in relation to performances provided.

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.





Atlas Uniț 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.

SABIANA

he 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.

he 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.

he 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.



his 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 **innouatiue 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.



Technical characteristics of the main components:

- 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).

R wide range of air boxes and accessories is available.

On request: special voltages and special air boxes.

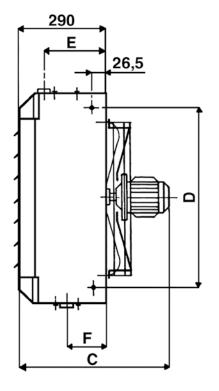
ATLAS identification code

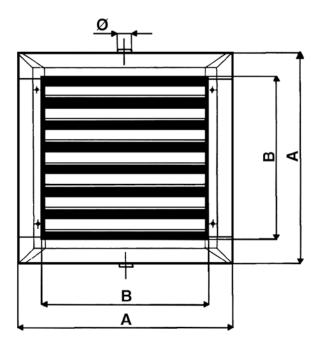
Reference: 46A42 SX

| 46 | Α | 4 | 2 | SX | SP |
|--------------------|----------------|------|------|------------|-------------|
| MOTOR 4/6 POLE | RANGE ATLAS | SIZE | ROWS | | COIL |
| (1350/1000 r.p.m.) | | 4 | 2 | STEEL TUBE | COPPER TUBE |



Dimensions, Weight, Water content





| SIZE | А | В | C (C-ATEX) | D | Ε | F | Ø |
|------|------|-----|------------------|------|-----|-----|--------|
| 1 | 472 | 336 | 465 <i>(595)</i> | 375 | 220 | 130 | 1 1⁄4" |
| 2 | 526 | 390 | 465 <i>(595)</i> | 429 | 220 | 130 | 1 1⁄4" |
| 3 | 580 | 444 | 465 <i>(595)</i> | 483 | 220 | 130 | 1 1⁄4" |
| 4 | 634 | 498 | 488 <i>(618)</i> | 537 | 220 | 130 | 1 1⁄4" |
| 5 | 688 | 552 | 488 <i>(618)</i> | 591 | 220 | 130 | 1 1⁄4' |
| 6 | 742 | 606 | 513 <i>(643)</i> | 645 | 220 | 130 | 1 1⁄4" |
| 7 | 793 | 657 | 560 (740) | 696 | 210 | 140 | 1 1⁄2" |
| 8 | 900 | 764 | 575 <i>(755)</i> | 803 | 210 | 140 | 1 1⁄2" |
| 9 | 1010 | 874 | 595 <i>(775)</i> | 913 | 210 | 140 | 1 1⁄2" |
| 10 | 1117 | 980 | 640 <i>(820)</i> | 1020 | 210 | 140 | 2" |

| WEI | GHT Kg <i>(A</i> i | TEX) | WATER | R CONTEN | T Liters |
|----------------|--------------------|----------------|-------|----------|----------|
| 1R | 2R | 3R | 1R | 2R | 3R |
| 19 <i>(32)</i> | 22 <i>(35)</i> | 24 <i>(37)</i> | 1,3 | 2,6 | 3,9 |
| 22 (35) | 25 <i>(37)</i> | 27 (40) | 1,6 | 3,2 | 4,8 |
| 26 <i>(38)</i> | 30 <i>(42)</i> | 33 <i>(45)</i> | 1,9 | 3,8 | 5,7 |
| 30 <i>(42)</i> | 34 <i>(46)</i> | 38 <i>(50)</i> | 2,3 | 4,6 | 6,9 |
| 33 (47) | 40 <i>(54)</i> | 44 <i>(58)</i> | 3,0 | 6,0 | 9,0 |
| 38 <i>(52)</i> | 46 <i>(60)</i> | 51 <i>(65)</i> | 3,5 | 7,0 | 10,5 |
| 46 <i>(63)</i> | 55 <i>(72)</i> | 61 <i>(78)</i> | 4,3 | 8,2 | 12,3 |
| 55 (71) | 66 <i>(82)</i> | 73 <i>(89)</i> | 5,8 | 11,1 | 16,6 |
| 65 <i>(86)</i> | 79 (100) | 88 (109) | 7,6 | 14,5 | 21,8 |
| 79 <i>(98)</i> | 95 (114) | 106 (125) | 9,6 | 18,2 | 27,3 |

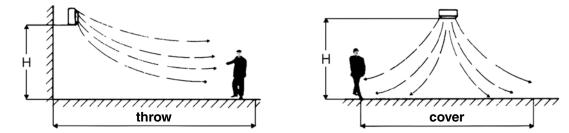
ATLAS TECHNICAL Specifications 4/6

4/6 POLE MODELS – WATER TEMPERATURE 85-75°C Drop 10°C - Δtm 65°C - Entering air temperature 15°C

| | | M0 SPE | TOR EED | AIR F | LOW | NO LEV AT : | | EMIS | SION | A | VING IR MP. | | MO | UNTING | NG HEIGHTS: | |
|------|-------|-----------|------------|-------|------|-------------------|-----|-------|-------|------|-------------------|-------|----------------|----------------|---------------|----------------|
| SIZE | MODEL | r.p | .m. | m | ³/h | (; dB | - | V | V | | C | POLES | HORIZ DISCH | ONTAL IARGE | VERT DISCH | |
| | | | | | | PO | LES | | | | | | HEIGHT | THROW | HEIGHT | COVER |
| | | 4 | 6 | 4 | 6 | 4 | 6 | 4 | 6 | 4 | 6 | | m | m | max m | m ² |
| | 46A11 | 1350 | 1000 | 1415 | 1055 | 56 | 50 | - | - | - | - | 4 | 2,5÷3,5 | 7,5 | 3,5 | 50 |
| | 46A12 | 1350 | 1000 | 1340 | 990 | 56 | 50 | 10,24 | 8,79 | 37,4 | 41,0 | | 05.0 | | 0 | |
| | 46A13 | 1350 | 1000 | 1195 | 885 | 56 | 50 | 11,39 | 9,62 | 42,9 | 46,8 | 6 | 2,5÷3 | 5 | 3 | 36 |
| | 46A21 | 1350 | 1000 | 2190 | 1680 | 59 | 53 | - | - | - | - | 4 | 3÷4 | 10 | 4 | 60 |
| 2 | 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 | 6 | 2,5÷3,5 | 7 | 3,5 | 45 |
| | 46A31 | 1350 | 1000 | 3325 | 2510 | 61 | 55 | - | - | - | - | 4 | 3÷4 | 13,5 | 5 | 70 |
| 3 | 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 | 6 | 2,5÷3,5 | 10 | 4 | 50 |
| | 46A41 | 1350 | 1000 | 4415 | 3305 | 64 | 57 | - | - | - | - | 4 | 3,5÷4,5 | 16 | 5,5 | 75 |
| 4 | 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 | 6 | 3÷4 | 12 | 4,5 | 55 |
| | 46A51 | 1350 | 1000 | 5770 | 4250 | 66 | 59 | - | - | - | - | 4 | 4÷5 | 18 | 6 | 90 |
| 5 | 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 | 3,5÷4,5 | 13 | 5 | 70 |
| | 46A61 | 1350 | 1000 | 6590 | 5065 | 69 | 62 | - | - | - | - | 4 | 4÷5,5 | 22 | 7 | 120 |
| 6 | 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 | 6 | 4÷5 | 16 | 6 | 100 |

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







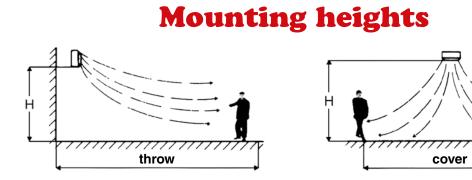
Rtlas

ATLAS TECHNICAL Specifications

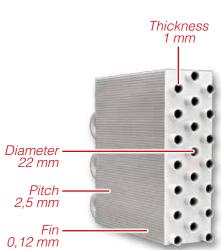
6/8 POLE MODELS – WATER TEMPERATURE 85-75°C Drop 10°C - Δtm 65°C - Entering air temperature 15°C

| | | M0 [°] SPE | | AIR F | LOW | | ISE /EL 5 m. | EMIS | SION | A | ving Ir Mp. | | MO | UNTING | HEIGH | TS: |
|------|----------------|------------------------|-----|----------------|------|----------|--------------------|----------|--------|--------------------|-------------------|----------|----------------|--------|---------------|----------------|
| SIZE | MODEL | r.p. | .m. | m ^a | /h | (; dB | F) (A) | V | V | | C | POLES | HORIZ Disch | | VERT DISCH | |
| | | | | | | PO | . , | | | | | | HEIGHT | THROW | HEIGHT | COVER |
| | | 6 | 8 | 6 | 8 | 6 | 8 | 6 | 8 | 6 | 8 | | m | m | max m | m ² |
| | 68A11 | 900 | 750 | 970 | 860 | 48 | 44 | - | - | - | - | 6 | 2,5÷3 | 5 | 3 | 36 |
| | 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 | 8 | 2,5÷3 | 4,5 | - | - |
| | 68A21 | 900 | 750 | 1495 | 1170 | 50 | 46 | - | - | - | - | 6 | 2,5÷3,5 | 7 | 3,5 | 45 |
| 2 | 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 | 8 | 2,5÷3,5 | 5,5 | - | - |
| | 68A31 | 900 | 750 | 2100 | 1620 | 52 | 48 | - | - | - | - | 6 | 2,5÷3,5 | 10 | 4 | 50 |
| 3 | 68A32 | 900 | 750 | 1880 | 1470 | 52 | 48 | 16,83 | 14,74 | 41,2 | 44,3 | | 05.05 | 7 | | |
| | 68A33 | 900 | 750 | 1735 | 1320 | 52 | 48 | 20,39 | 17,28 | 49,4 | 53,3 | 8 | 2,5÷3,5 | 7 | - | - |
| | 68A41 | 900 | 750 | 2795 | 2195 | 54 | 50 | - | - | - | - | 6 | 3÷4 | 12 | 4,5 | 55 |
| 4 | 68A42 | 900 | 750 | 2345 | 1755 | 54 | 50 | 22,14 | 18,91 | 42,6 | 46,5 | • | 0.4 | 0 | | |
| | 68A43 | 900 | 750 | 2010 | 1535 | 54 | 50 | 24,47 | 20,70 | 50,6 | 54,4 | 8 | 3÷4 | 8 | - | _ |
| | 68A51 | 900 | 750 | 3685 | 2865 | 56 | 51 | - | - | - | - | 6 | 3,5÷4,5 | 13 | 5 | 70 |
| 5 | 68A52 | 900 | 750 | 3050 | 2335 | 56 | 51 | 27,87 | 24,17 | , | 45,3 | 8 | 3,5÷4,5 | 9,5 | | |
| | 68A53 | 900 | 750 | 2785 | 2100 | 56 | 51 | 33,58 | 27,27 | 50,3 | 54,4 | 0 | 3,3-4,3 | 9,0 | - | _ |
| | 68A61 | 900 | 750 | 4445 | 3550 | 59 | 54 | - | - | - | - | 6 | 4÷5 | 16 | 6 | 100 |
| | 68A62 | 900 | 750 | 3710 | 2960 | 59 | 54 | 34,33 | 30,37 | , | 45,0 | 8 | 4÷5 | 12 | _ | |
| | 68A63 | 900 | 750 | 3270 | 2610 | 59 | 54 | 40,43 | 35,19 | 51,2 | 54,4 | <u> </u> | 470 | 12 | _ | |
| 7 | 68A71 | 900 | 750 | 5100 | 3960 | 65 | 59 | - | - | - | - | 6 | 4÷5 | 24 | 7 | 120 |
| | 68A72 | 900 | 750 | 4800 | 3650 | 65 | 59 | 44,20 | 38,13 | , | 45,6 | 8 | 3,5÷4 | 18 | 6 | 100 |
| | 68A73 | 900 | 750 | 4600 | 3500 | 65 | 59 | 52,35 | 44,50 | | 52,2 | | 0,0 | | ~ | |
| 0 | 68A81 68A82 | 900 | 750 | 7650 | 5400 | 67 | 61 | - | - | - 20.4 | - | 6 | 4÷5,5 | 26 | 9 | 160 |
| 0 | 68A82 | 900 | 750 | 6900 | 4950 | 67 | 61 | 57,57 | 48,47 | , | 43,6 | 8 | 3,5÷4,5 | 20 | 7 | 130 |
| | 68A91 | 900 | 750 | 6300 10600 | 4500 | 67 | 61 62 | 70,23 | 57,52 | , | 52,4 | | | | | |
| | 68A91 | 900 900 | 750 | 10200 | 7600 | 68 68 | | - 82,12 | - | - 28 6 | - | 6 | 4÷6 | 28 | 11 | 200 |
| J | 68A93 | 900 | 750 | 9400 | 6400 | 68 | | 101,49 | | - | | 8 | 3,5÷5 | 21 | 8 | 150 |
| | 68A101 | 900 | | 12250 | | 71 | 65 | - | - | | | | 4.0 | 0.0 | 40 | 000 |
| 10 | 68A102 | 900 | | 11800 | | 71 | | - 101,20 | | | | 6 | 4÷6 | 30 | 12 | 220 |
| | 68A103 | | | 11000 | | 71 | | 124,93 | | | | 8 | 4÷5 | 22 | 9 | 160 |
| | UNIDU | 300 | 100 | 1000 | 1000 | 11 | 00 | 124,30 | 102,33 | - 1 0,2 | J <u>L</u> ,J | | | | | |

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







Atlas ECM 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.

Technical characteristics of the main components:

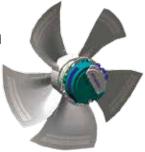
For the technical characteristics of the various components refer to ATLAS Unit Heater, excluding the Electronic motor: single phase permanent magnet

brushless electronic motor (protection IP54). The inverter board that controls the motor operation is powered by 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 200 - 240 V and frequency of 50 - 60 Hz.

<u>Helicoidal fan</u>

DEORD

The fan is made with statically and dynamically balanced plastic or aluminium 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.



Atlas ECM Technical

Specifications

WATER TEMPERATURE 85-75°C Drop 10°C - ∆tm 65°C - Entering air temperature 15°C **Atlas ECM**

| MODEL | | A | tla | s A- | -EC | M1 [•] | 1 | A | tla | s A- | -EC | M1 | 2 | Atlas A-ECM13 | | | | | 3 |
|---------------------------------|----------------|------|------|-------|-------|-----------------|------|------|------|-------|-------|------|------|---------------|-------|-------|-------|------|------|
| Inverter Power | V | 10 | 9 | 8 | 7 | 6 | 5 | 10 | 9 | 8 | 7 | 6 | 5 | 10 | 9 | 8 | 7 | 6 | 5 |
| Speed | r.p.m. | 1126 | 1047 | 945 | 852 | 736 | 623 | 1126 | 1047 | 945 | 852 | 736 | 623 | 1126 | 1047 | 945 | 852 | 736 | 623 |
| Air flow | m³/h | 1260 | 1100 | 965 | 835 | 695 | 580 | 1155 | 1060 | 915 | 800 | 665 | 565 | 1100 | 1010 | 870 | 760 | 640 | 545 |
| Thermal emission | kW | 5,67 | 5,35 | 5,04 | 4,72 | 4,33 | 3,96 | 9,12 | 8,74 | 8,10 | 7,53 | 6,81 | 6,19 | 11,39 | 10,83 | 9,94 | 9,16 | 8,23 | 7,41 |
| Leaving air temperature | °C | 28 | 29 | 30 | 32 | 33 | 35 | 38 | 39 | 41 | 43 | 45 | 47 | 45 | 46 | 48 | 50 | 53 | 55 |
| Fan | W | 78,2 | 62,0 | 45,5 | 33,0 | 22,5 | 14,3 | 78,2 | 62,0 | 45,5 | 33,0 | 22,5 | 14,3 | 78,2 | 62,0 | 45,5 | 33,0 | 22,5 | 14,3 |
| Sound pressure | dB(A) | 42,0 | 40,5 | 38,5 | 35,5 | 31,7 | 27,5 | 42,0 | 40,5 | 38,5 | 35,5 | 31,7 | 27,5 | 42,0 | 40,5 | 38,5 | 35,5 | 31,7 | 27,5 |
| Horizontal discharge: Height | m | | | 2,5 - | ÷ 3,5 | | | | | 2,5 - | - 3,5 | | | | | 2,5 - | ÷ 3,5 | | |
| Horizontal discharge: Throw | m | 6,5 | 6,0 | 5,5 | 5,0 | 4,5 | 4,0 | 6,0 | 5,5 | 5,0 | 5,0 | 4,5 | 4,0 | 6,0 | 5,5 | 5,0 | 4,5 | 4,5 | 4,0 |
| Vertical discharge: Height max. | m | 3,5 | 3,0 | 2,5 | - | - | - | 3,0 | 3,0 | 2,5 | - | - | - | 3,0 | 3,0 | 2,6 | - | - | - |
| Vertical discharge: Cover | m ² | 40 | 40 | 35 | - | - | - | 40 | 40 | 35 | - | - | - | 40 | 40 | 35 | - | - | - |

| MODEL | | A | tla | s A- | -EC | M2 | 1 | A | tla | s A- | -EC | M2 | 2 | A | Itla | s A- | -EC | M2 | 3 |
|---------------------------------|----------------|------|------|-------|-------|------|------|-------|-------|-------|-------|------|------|-------|-------------|-------|-------|-----------|-------|
| Inverter Power | V | 10 | 9 | 8 | 7 | 6 | 5 | 10 | 9 | 8 | 7 | 6 | 5 | 10 | 9 | 8 | 7 | 6 | 5 |
| Speed r | r.p.m. | 1124 | 1023 | 918 | 823 | 713 | 601 | 1124 | 1023 | 918 | 823 | 713 | 601 | 1124 | 1023 | 918 | 823 | 713 | 601 |
| Air flow | m³/h | 1790 | 1545 | 1350 | 1190 | 980 | 780 | 1650 | 1450 | 1255 | 1080 | 890 | 735 | 1580 | 1390 | 1205 | 1035 | 855 | 705 |
| Thermal emission | kW | 8,26 | 7,74 | 7,29 | 6,88 | 6,29 | 5,61 | 13,34 | 12,47 | 11,58 | 10,68 | 9,57 | 8,55 | 16,73 | 15,56 | 14,31 | 13,04 | 11,55 | 10,15 |
| Leaving air temperature | °C | 29 | 30 | 31 | 32 | 34 | 36 | 39 | 40 | 42 | 44 | 46 | 49 | 46 | 48 | 50 | 52 | 55 | 57 |
| Fan | W | 122 | 92,5 | 67 | 49 | 34 | 21,5 | 122 | 92,5 | 67 | 49 | 34 | 21,5 | 122 | 92,5 | 67 | 49 | 34 | 21,5 |
| Sound pressure d | dB(A) | 47,0 | 45,5 | 43,5 | 40,5 | 36,7 | 32,5 | 47,0 | 45,5 | 43,5 | 40,5 | 36,7 | 32,5 | 47,0 | 45,5 | 43,5 | 40,5 | 36,7 | 32,5 |
| Horizontal discharge: Height | m | | | 2,5 - | - 3,5 | | | | | 2,5 - | - 3,5 | | | | | 2,5 - | ÷ 3,5 | | |
| Horizontal discharge: Throw | m | 8,0 | 7,0 | 6,5 | 6,0 | 5,5 | 5,0 | 7,5 | 7,0 | 5,7 | 5,5 | 5,0 | 4,5 | 7,0 | 6,5 | 6,0 | 5,5 | 5,0 | 4,5 |
| Vertical discharge: Height max. | m | 4,0 | 3,5 | 3,0 | - | - | - | 3,5 | 3,5 | 3,0 | - | - | - | 3,5 | 3,0 | 3,0 | - | - | - |
| Vertical discharge: Cover | m ² | 50 | 45 | 45 | - | - | - | 45 | 45 | 45 | - | - | - | 40 | 40 | 40 | - | - | - |

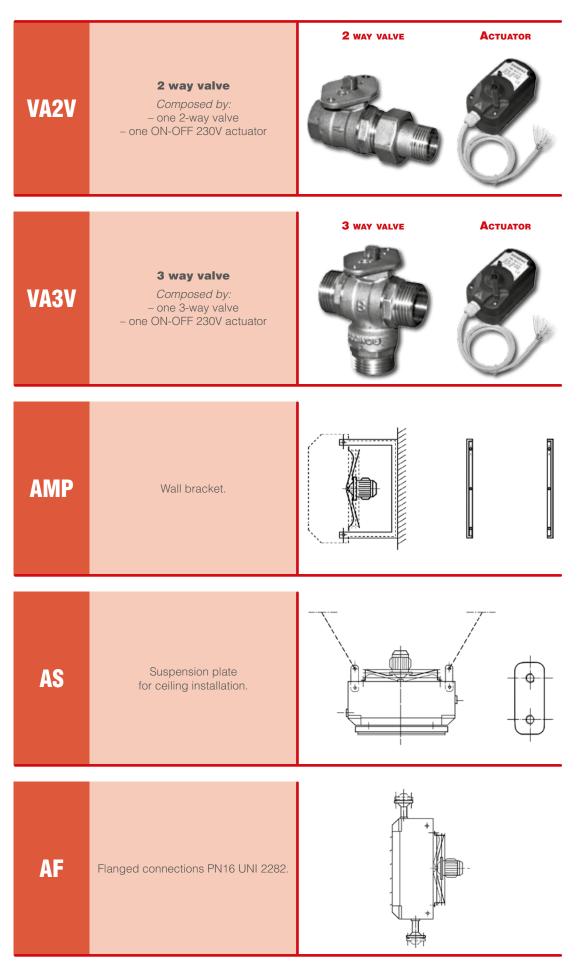
| MODEL | | A | tla | s A- | -EC | M3 | 1 | A | tla | s A- | -EC | M3 | 2 | A | tla | s A- | -EC | M3 | 3 |
|---------------------------------|----------------|-------|-------|-------|-------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Inverter Power | V | 10 | 9 | 8 | 7 | 6 | 5 | 10 | 9 | 8 | 7 | 6 | 5 | 10 | 9 | 8 | 7 | 6 | 5 |
| Speed | r.p.m. | 1126 | 1047 | 945 | 852 | 736 | 623 | 1126 | 1047 | 945 | 852 | 736 | 623 | 1126 | 1047 | 945 | 852 | 736 | 623 |
| Air flow | m³/h | 2620 | 2340 | 2050 | 1740 | 1475 | 1180 | 2235 | 2040 | 1830 | 1610 | 1315 | 1090 | 2075 | 1895 | 1700 | 1500 | 1220 | 1015 |
| Thermal emission | kW | 11,76 | 11,21 | 10,59 | 9,82 | 9,10 | 8,16 | 18,36 | 17,54 | 16,59 | 15,50 | 13,86 | 12,43 | 22,60 | 21,48 | 20,14 | 18,68 | 16,42 | 14,56 |
| Leaving air temperature | °C | 28 | 29 | 30 | 32 | 33 | 35 | 39 | 40 | 42 | 43 | 46 | 48 | 47 | 48 | 50 | 51 | 54 | 57 |
| Fan | W | 166 | 136 | 101 | 73 | 50 | 31,5 | 166 | 136 | 101 | 73 | 50 | 31,5 | 166 | 136 | 101 | 73 | 50 | 31,5 |
| Sound pressure | dB(A) | 44,0 | 44,0 | 41,5 | 39,0 | 35,7 | 31,0 | 44,0 | 44,0 | 42,0 | 40,0 | 36,0 | 32,0 | 44,0 | 44,0 | 42,0 | 40,0 | 36,0 | 32,0 |
| Horizontal discharge: Height | m | | | 2,5 - | - 3,5 | | | | | 2,5 - | - 3,5 | | | | | 2,5 - | - 3,5 | | |
| Horizontal discharge: Throw | m | 12,0 | 11,0 | 10,0 | 8,5 | 7,5 | 6,5 | 10,5 | 10,0 | 9,0 | 8,0 | 7,0 | 6,5 | 10,0 | 9,5 | 8,5 | 8,0 | 7,0 | 6,0 |
| Vertical discharge: Height max. | m | 4,5 | 4,0 | 4,0 | 3,5 | - | - | 4,0 | 4,0 | 3,5 | 3,5 | - | - | 4,0 | 3,5 | 3,5 | - | - | - |
| Vertical discharge: Cover | m ² | 60 | 60 | 55 | 50 | - | - | 60 | 55 | 50 | 50 | - | - | 55 | 50 | 50 | - | - | - |

| MODEL | | A | tla | s A- | -EC | M4 | 1 | A | tla | s A- | -EC | M4 | 2 | A | tla | s A- | -EC | M4 | 3 |
|---------------------------------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------------|-------|-------|-------|-------|
| Inverter Power | V | 10 | 9 | 8 | 7 | 6 | 5 | 10 | 9 | 8 | 7 | 6 | 5 | 10 | 9 | 8 | 7 | 6 | 5 |
| Speed | r.p.m. | 1059 | 979 | 893 | 798 | 692 | 588 | 1059 | 979 | 893 | 798 | 692 | 588 | 1059 | 979 | 893 | 798 | 692 | 588 |
| Air flow | m³/h | 3440 | 3210 | 2875 | 2460 | 2075 | 1680 | 2815 | 2395 | 2040 | 1710 | 1390 | 1150 | 2490 | 2120 | 1805 | 1515 | 1230 | 1020 |
| Thermal emission | kW | 15,48 | 15,04 | 14,34 | 13,39 | 12,37 | 11,19 | 23,68 | 21,83 | 20,02 | 18,18 | 16,11 | 14,35 | 28,40 | 25,81 | 23,41 | 20,96 | 18,22 | 16,02 |
| Leaving air temperature | °C | 28 | 29 | 30 | 31 | 32 | 34 | 40 | 42 | 44 | 46 | 49 | 52 | 48 | 51 | 53 | 55 | 58 | 61 |
| Fan | W | 166 | 131 | 98,5 | 70 | 48 | 30 | 166 | 131 | 98,5 | 70 | 48 | 30 | 166 | 131 | 98,5 | 70 | 48 | 30 |
| Sound pressure | dB(A) | 45,0 | 45,0 | 42,5 | 40,0 | 36,7 | 32,0 | 45,0 | 45,0 | 42,5 | 40,0 | 36,7 | 32,0 | 45,0 | 45,0 | 42,5 | 40,0 | 36,7 | 32,0 |
| Horizontal discharge: Height | m | | | 3 ÷ | 4,5 | | | | | 3 ÷ | 4,5 | | | | | 3 ÷ | 4,5 | | |
| Horizontal discharge: Throw | m | 14,5 | 14,0 | 12,5 | 11,0 | 9,5 | 8,5 | 12,5 | 11,0 | 9,6 | 8,5 | 7,0 | 6,5 | 11,0 | 10,0 | 9,0 | 8,0 | 6,5 | 6,0 |
| Vertical discharge: Height max. | m | 5,0 | 5,0 | 4,5 | 4,0 | - | - | 4,5 | 4,0 | 4,0 | 3,5 | - | - | 4,0 | 4,0 | 3,5 | - | - | - |
| Vertical discharge: Cover | m ² | 70 | 70 | 65 | 60 | - | - | 65 | 60 | 55 | 50 | _ | - | 60 | 55 | 50 | - | - | - |

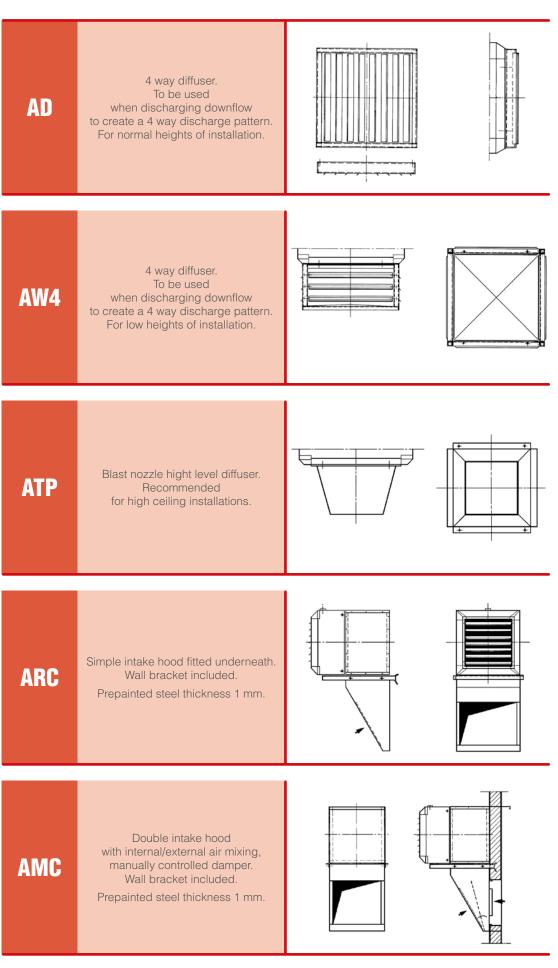
| MODEL | | A | tla | s A- | -EC | M5 | 1 | ļ | tla | s A- | -EC | M5 | 2 | ļ | tla | s A- | -EC | M5 | 3 |
|---------------------------------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Inverter Power | V | 10 | 9 | 8 | 7 | 6 | 5 | 10 | 9 | 8 | 7 | 6 | 5 | 10 | 9 | 8 | 7 | 6 | 5 |
| Speed | r.p.m. | 1108 | 1108 | 1044 | 924 | 800 | 650 | 1108 | 1108 | 1044 | 924 | 800 | 650 | 1108 | 1108 | 1044 | 924 | 800 | 650 |
| Air flow | m³/h | 5130 | 5130 | 4600 | 4045 | 3340 | 2575 | 4010 | 4010 | 3695 | 3185 | 2705 | 2060 | 3455 | 3455 | 3185 | 2745 | 2330 | 1775 |
| Thermal emission | kW | 21,10 | 21,10 | 20,18 | 19,14 | 17,60 | 15,62 | 32,00 | 32,00 | 30,74 | 28,51 | 26,17 | 22,53 | 38,11 | 38,11 | 36,40 | 33,36 | 30,17 | 25,34 |
| Leaving air temperature | °C | 27 | 27 | 28 | 29 | 30 | 33 | 38 | 38 | 39 | 41 | 43 | 47 | 47 | 47 | 48 | 51 | 53 | 57 |
| Fan | W | 265 | 265 | 219 | 156 | 104 | 59 | 265 | 265 | 219 | 156 | 104 | 59 | 265 | 265 | 219 | 156 | 104 | 59 |
| Sound pressure | dB(A) | 47,0 | 47,0 | 46,5 | 44,0 | 40,0 | 35,0 | 47,0 | 47,0 | 46,5 | 44,0 | 40,0 | 35,0 | 47,0 | 47,0 | 46,5 | 44,0 | 40,0 | 35,0 |
| Horizontal discharge: Height | m | | | 3 ÷ | 4,5 | | | | | 3÷ | 4,5 | | | | | 3÷ | 4,5 | | |
| Horizontal discharge: Throw | m | 19,0 | 19,0 | 17,0 | 15,0 | 12,6 | 10,0 | 15,0 | 15,0 | 14,0 | 12,0 | 10,5 | 8,0 | 13,0 | 13,0 | 12,0 | 10,5 | 9,0 | 7,0 |
| Vertical discharge: Height max. | m | 6,0 | 6,0 | 5,5 | 5,0 | - | - | 5,0 | 5,0 | 5,0 | 4,5 | - | - | 5,0 | 5,0 | 4,5 | 4,0 | - | - |
| Vertical discharge: Cover | m ² | 85 | 85 | 80 | 80 | - | - | 80 | 80 | 75 | 70 | - | - | 75 | 75 | 70 | 65 | - | - |

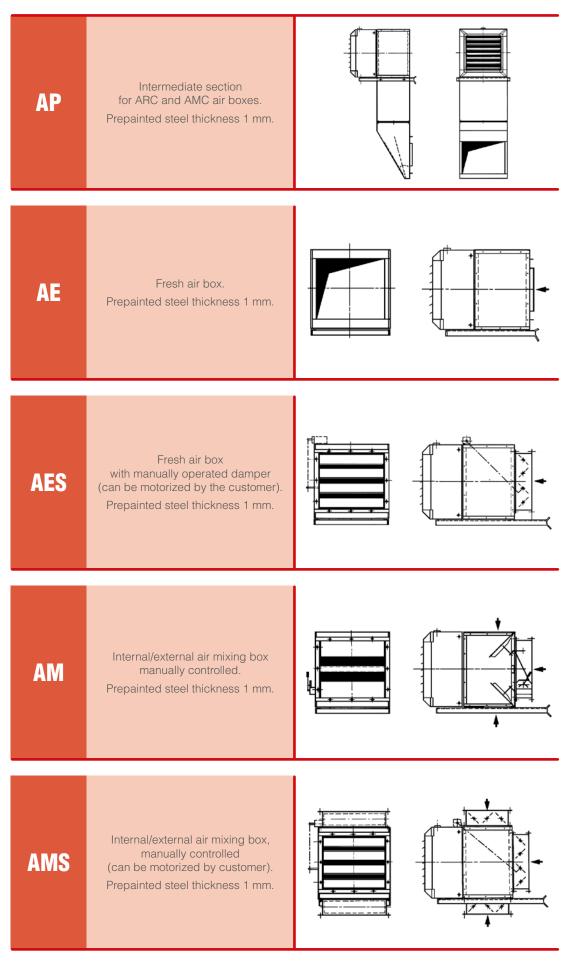
| MODEL | | A | tla | s A- | -EC | M6 | 1 | ļ | tla | s A- | -EC | M6 | 2 | A | tla | s A- | -EC | M6 | 3 |
|---------------------------------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Inverter Power | V | 10 | 9 | 8 | 7 | 6 | 5 | 10 | 9 | 8 | 7 | 6 | 5 | 10 | 9 | 8 | 7 | 6 | 5 |
| Speed | r.p.m. | 1107 | 1107 | 1053 | 930 | 798 | 653 | 1107 | 1107 | 1053 | 930 | 798 | 653 | 1107 | 1107 | 1053 | 930 | 798 | 653 |
| Air flow | m³/h | 5895 | 5895 | 5355 | 4585 | 3765 | 2910 | 4535 | 4535 | 4260 | 3590 | 2975 | 2375 | 3845 | 3845 | 3610 | 3040 | 2520 | 2010 |
| Thermal emission | kW | 25,35 | 25,35 | 24,34 | 22,77 | 20,90 | 18,53 | 38,05 | 38,05 | 36,83 | 33,73 | 30,45 | 26,86 | 44,48 | 44,48 | 42,86 | 38,65 | 34,39 | 29,69 |
| Leaving air temperature | °C | 28 | 28 | 28 | 30 | 31 | 34 | 40 | 40 | 40 | 42 | 45 | 48 | 49 | 49 | 50 | 52 | 55 | 58 |
| Fan | W | 246 | 246 | 211 | 148 | 96 | 59 | 246 | 246 | 211 | 148 | 96 | 59 | 246 | 246 | 211 | 148 | 96 | 59 |
| Sound pressure | dB(A) | 48,0 | 48,0 | 47,5 | 45,0 | 41,0 | 36,0 | 48,0 | 48,0 | 47,5 | 45,0 | 41,0 | 36,0 | 48,0 | 48,0 | 47,5 | 45,0 | 41,0 | 36,0 |
| Horizontal discharge: Height | m | | | 3 - | - 5 | | | | | 3. | ÷ 5 | | | | | 3 - | - 5 | | |
| Horizontal discharge: Throw | m | 22,0 | 22,0 | 20,0 | 17,0 | 14,0 | 11,0 | 17,0 | 17,0 | 16,0 | 13,5 | 11,5 | 9,0 | 14,5 | 14,5 | 13,5 | 11,5 | 9,5 | 8,0 |
| Vertical discharge: Height max. | m | 6,5 | 6,5 | 6,0 | 5,5 | - | - | 5,5 | 5,5 | 5,0 | 5,0 | - | - | 5,0 | 5,0 | 5,0 | 4,5 | - | - |
| Vertical discharge: Cover | m ² | 100 | 100 | 95 | 90 | - | - | 90 | 90 | 90 | 85 | - | - | 85 | 85 | 85 | 80 | - | - |

 $\label{eq:measurement} Measurement performed at 5 meter from the source \\ Room volume of 500 \ m^3$ - Reverberation period of 2 s - Directional factor Q=2 (hemisphere sound emission). \\



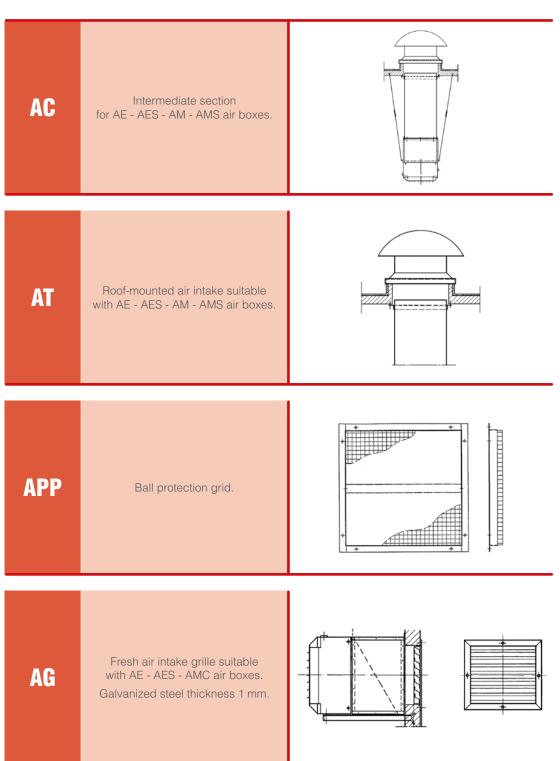












Controls and Special motors for <u>Atlas Unit Heaters sizes 1+10</u>

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



• Single speed flame proof motor II2GEExd IIBT4 - compliant with the ATEX Standard

• Capacitor for single phase motor (not mounted)



<u>Wall</u> electronic controls for <u>Atlas ECM Unit Heaters sizes 1÷6</u>

For each unit must be prouided - the ADC conuerter for wall controls -

| ADCA-M | ADC signal converter for wall controls fitted on the unit |
|--------|--|
| ADC-S | ADC signal converter for wall controls supplied with separate packaging |
| WM-3V | 3 speed control |
| WM-T | 3 speed control with electronic thermostat and manual summer/winter switch |



WM-T



Remote control for <u>industrial applications</u>

For each unit must be prouided - the 4–20 mA / 0–10U signal conuerter -

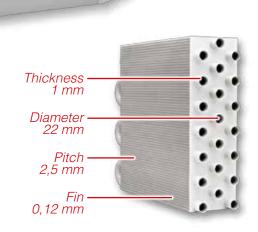
| UH-ECM | EC Base Control |
|------------|---|
| UH-ECM-CNV | 4-20 mA / 0-10V signal converter |
| UH-ECM-RLP | Potentiometer to control the speed of the motor |
| UH-ECM-NTC | NTC probe with box |

UH-ECM



UH-ECM-RLP





Helios Uniț 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.

SABIANA

elios 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.

he coil of Sabiana Helios unit heaters with steel tubes Ø 22 mm and aluminium fins has the following **aduantages** 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.

he 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.

he 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.



owever 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 **innouatiue 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.

Technical characteristics of the main components:

- 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).

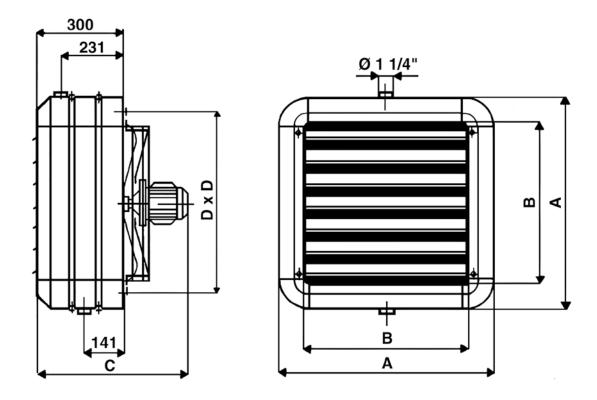
HELIOS identification code

Reference: 46H53 SX

| 46 | Н | 5 | 3 | SX |
|--------------------|-----------------|------|------|--------------------|
| MOTOR 4/6 POLE | RANGE HELIOS | SIZE | ROWS | COIL STEEL TUBE |
| (1350/1000 r.p.m.) | | 5 | 3 | |
| | | | | |
| | | | | SP |



Dimensions, Weight, Water content



| 017E | ٨ | D | С | D | |
|------|-----|-----|-----|-----|---|
| SIZE | A | В | U | D | 1 |
| 1 | 486 | 330 | 477 | 406 | 1 |
| 2 | 540 | 384 | 477 | 460 | 2 |
| 3 | 594 | 438 | 477 | 514 | 2 |
| 4 | 648 | 492 | 500 | 568 | 3 |
| 5 | 702 | 546 | 500 | 622 | 3 |
| 6 | 756 | 600 | 525 | 676 | 3 |

| ١ | NEIGHT K | g | WATER | CONTEN | T Liters |
|----|----------|----|-------|--------|----------|
| 1R | 2R | 3R | 1R | 2R | 3R |
| 19 | 22 | 24 | 1,3 | 2,6 | 3,9 |
| 22 | 25 | 27 | 1,6 | 3,2 | 4,8 |
| 26 | 30 | 33 | 1,9 | 3,8 | 5,7 |
| 30 | 34 | 38 | 2,3 | 4,6 | 6,9 |
| 33 | 40 | 44 | 3,0 | 6,0 | 9,0 |
| 38 | 46 | 51 | 3,5 | 7,0 | 10,5 |

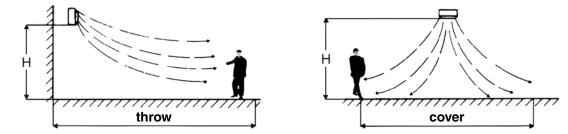
HELIOS TECHNICAL Specifications

4/6 POLE MODELS – WATER TEMPERATURE 85-75°C Drop 10°C - Δtm 65°C - Entering air temperature 15°C

| | | | TOR EED | AIR F | LOW | LE | ISE /EL 5 m. | EMIS | SION | | VING IR | | MO | UNTING | HEIGH | TS: |
|------|---------------|------|------------|-------|------|----------|--------------------|-------|-------|------|------------|-------|----------------|----------------|---------------|----------------|
| SIZE | MODEL | r.p | .m. | m | ³/h | (; dB | *) (A) | V | V | 0 | | POLES | HORIZ Disch | ONTAL IARGE | VERT DISCH | |
| | | | | | | PO | LES | | | | | | HEIGHT | THROW | HEIGHT | COVER |
| | | 4 | 6 | 4 | 6 | 4 | 6 | 4 | 6 | 4 | 6 | | m | m | max m | m ² |
| | 46H11 | 1350 | 1000 | 1415 | 1055 | 56 | 50 | - | - | - | - | 4 | 2,5÷3,5 | 7,5 | 3,5 | 50 |
| | 46H12 | 1350 | 1000 | 1340 | 990 | 56 | 50 | 10,24 | 8,79 | 37,4 | 41,0 | • | 0.5.0 | | 0 | |
| | 46H13 | 1350 | 1000 | 1195 | 885 | 56 | 50 | 11,39 | 9,62 | 42,9 | 46,8 | 6 | 2,5÷3 | 5 | 3 | 36 |
| | 46H21 | 1350 | 1000 | 2190 | 1680 | 59 | 53 | - | - | - | - | 4 | 3÷4 | 10 | 4 | 60 |
| 2 | 46H22 | 1350 | 1000 | 2010 | 1570 | 59 | 53 | 13,95 | 12,36 | 35,3 | 38,0 | | 05.05 | _ | 0.5 | |
| | 46H23 | 1350 | 1000 | 1875 | 1420 | 59 | 53 | 17,52 | 15,07 | 42,4 | 46,0 | 6 | 2,5÷3,5 | 7 | 3,5 | 45 |
| | 46H31 | 1350 | 1000 | 3325 | 2510 | 61 | 55 | - | - | - | - | 4 | 3÷4 | 13,5 | 5 | 70 |
| 3 | 46H32 | 1350 | 1000 | 2915 | 2255 | 61 | 55 | 20,85 | 18,44 | 35,9 | 38,9 | | | 10 | | |
| | 46H33 | 1350 | 1000 | 2610 | 2040 | 61 | 55 | 25,68 | 22,41 | 43,8 | 47,1 | 6 | 2,5÷3,5 | 10 | 4 | 50 |
| | 46H41 | 1350 | 1000 | 4415 | 3305 | 64 | 57 | - | - | - | - | 4 | 3,5÷4,5 | 16 | 5,5 | 75 |
| | 46H42 | 1350 | 1000 | 3725 | 2745 | 64 | 57 | 27,86 | 24,06 | 36,9 | 40,6 | | | | | |
| | 46H43 | 1350 | 1000 | 3210 | 2390 | 64 | 57 | 32,03 | 27,14 | 44,2 | 48,2 | 6 | 3÷4 | 12 | 4,5 | 55 |
| | 46H5 1 | 1350 | 1000 | 5770 | 4250 | 66 | 59 | - | - | - | - | 4 | 4÷5 | 18 | 6 | 90 |
| 5 | 46H52 | 1350 | 1000 | 4800 | 3500 | 66 | 59 | 34,89 | 29,94 | 36,3 | 40,0 | | | | | |
| | 46H53 | 1350 | 1000 | 4325 | 3110 | 66 | 59 | 43,06 | 35,90 | 44,1 | 48,8 | 6 | 3,5÷4,5 | 13 | 5 | 70 |
| | 46H61 | 1350 | 1000 | 6590 | 5065 | 69 | 62 | - | - | - | - | 4 | 4÷5,5 | 22 | 7 | 120 |
| 6 | 46H62 | 1350 | 1000 | 5515 | 4160 | 69 | 62 | 41,76 | 36,36 | 37,2 | 40,6 | | | | | |
| | 46H63 | 1350 | 1000 | 4900 | 3620 | 69 | 62 | 50,96 | 42,98 | 45,4 | 49,7 | 6 | 4÷5 | 16 | 6 | 100 |

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

Mounting heights





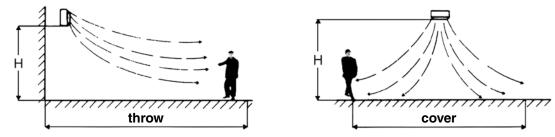
HELIOS TECHNICAL Specifications 6/8 P

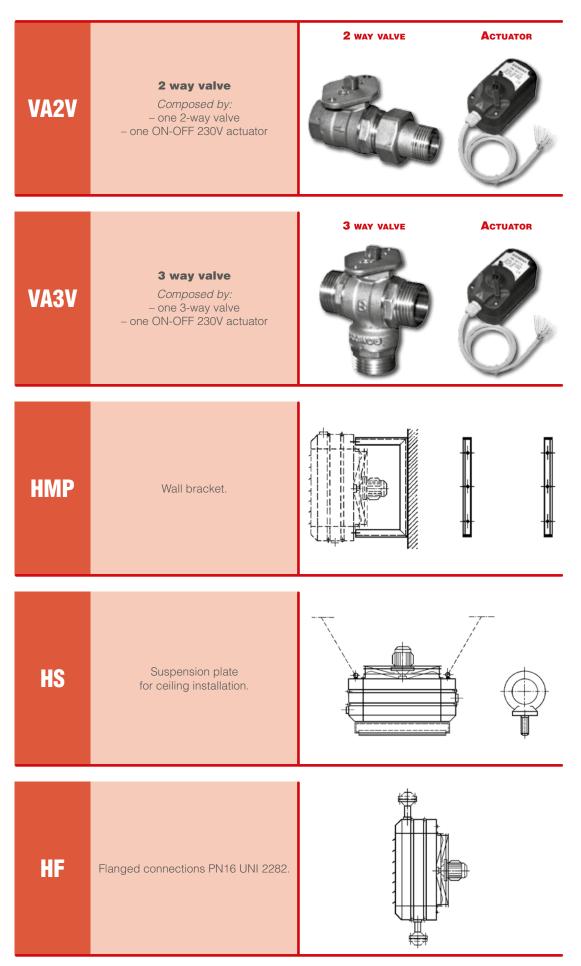
6/8 POLE MODELS – WATER TEMPERATURE 85-75°C Drop 10°C - Δtm 65°C - Entering air temperature 15°C

| | | M0 SPE | TOR EED | AIR F | LOW | LE | ISE VEL 5 m. | EMIS | SION | | VING IR | | MO | UNTING | HEIGH | TS: |
|------|--------------|-----------|------------|-------|------|----|--------------------|-------|-------|------|------------|-------|---------|----------------|---------------|----------------|
| SIZE | MODEL | r.p | .m. | m | ³/h | | *) (A) | V | V | | C | POLES | | ONTAL IARGE | VERT DISCH | |
| | | | | | | PO | LES | | | | | | HEIGHT | THROW | HEIGHT | COVER |
| | | 6 | 8 | 6 | 8 | 6 | 8 | 6 | 8 | 6 | 8 | | m | m | max m | m ² |
| 1 | 68H11 | 900 | 750 | 970 | 860 | 48 | 44 | - | - | - | - | 6 | 2,5÷3 | 5 | 3 | 36 |
| | 68H12 | 900 | 750 | 935 | 830 | 48 | 44 | 8,54 | 8,01 | 41,7 | 43,2 | | | | | |
| | 68H13 | 900 | 750 | 835 | 740 | 48 | 44 | 9,29 | 8,65 | 47,5 | 49,2 | 8 | 2,5÷3 | 4,5 | - | - |
| | 68H21 | 900 | 750 | 1495 | 1170 | 50 | 46 | - | - | - | - | 6 | 2,5÷3,5 | 7 | 3,5 | 45 |
| 12 | 68H22 | 900 | 750 | 1410 | 1100 | 50 | 46 | 11,70 | 10,26 | 39,3 | 42,3 | | | | | |
| | 68H23 | 900 | 750 | 1290 | 1025 | 50 | 46 | 14,23 | 12,41 | 47,3 | 50,4 | 8 | 2,5÷3,5 | 5,5 | - | - |
| | 68H31 | 900 | 750 | 2100 | 1620 | 52 | 48 | - | - | - | - | 6 | 2,5÷3,5 | 10 | 4 | 50 |
| 3 | 68H32 | 900 | 750 | 1880 | 1470 | 52 | 48 | 16,83 | 14,74 | 41,2 | 44,3 | | | | | |
| | 68H33 | 900 | 750 | 1735 | 1320 | 52 | 48 | 20,39 | 17,28 | 49,4 | 53,3 | 8 | 2,5÷3,5 | 7 | - | - |
| | 68H41 | 900 | 750 | 2795 | 2195 | 54 | 50 | - | - | - | - | 6 | 3÷4 | 12 | 4,5 | 55 |
| | 68H42 | 900 | 750 | 2345 | 1755 | 54 | 50 | 22,14 | 18,91 | 42,6 | 46,5 | | | | | |
| | 68H43 | 900 | 750 | 2010 | 1535 | 54 | 50 | 24,47 | 20,70 | 50,6 | 54,4 | 8 | 3÷4 | 8 | - | - |
| | 68H51 | 900 | 750 | 3685 | 2865 | 56 | 51 | - | - | - | - | 6 | 3,5÷4,5 | 13 | 5 | 70 |
| 5 | 68H52 | 900 | 750 | 3050 | 2335 | 56 | 51 | 27,87 | 24,17 | 41,7 | 45,3 | | | - | - | |
| | 68H53 | 900 | 750 | 2785 | 2100 | 56 | 51 | 33,58 | 27,27 | 50,3 | 54,4 | 8 | 3,5÷4,5 | 9,5 | - | - |
| | 68H61 | 900 | 750 | 4445 | 3550 | 59 | 54 | - | - | - | - | 6 | 4÷5 | 16 | 6 | 100 |
| 6 | 68H62 | 900 | 750 | 3710 | 2960 | 59 | 54 | 34,33 | 30,37 | 42,1 | 45,0 | | | | | |
| | 68H63 | 900 | 750 | 3270 | 2610 | 59 | 54 | 40,43 | 35,19 | 51,2 | 54,4 | 8 | 4÷5 | 12 | - | - |

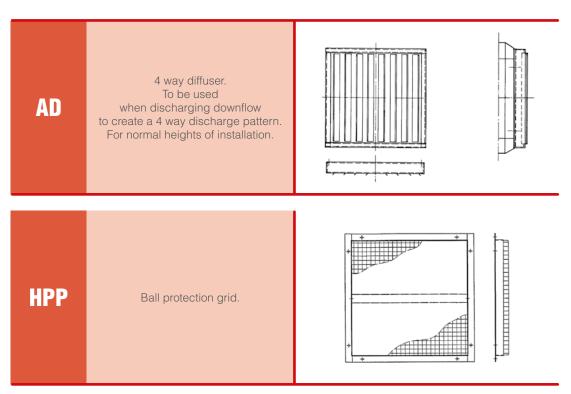
(*) = The sound pressure levels dB(A) are measured at a distance of 5m, directional factor Q = 2, compliant with the EN 3744 standard.



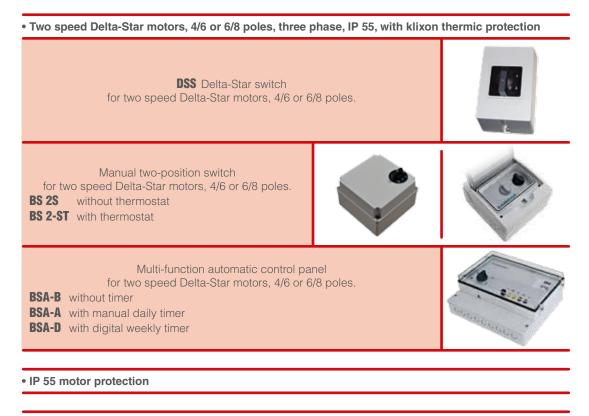








Controls and Special motors



Capacitor for single phase motor (not mounted)



Jetstream Induction Flow Optimizer

The Atlas, Helios, Atlas ECM and Janus 05 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.

Technical characteristics:

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%,

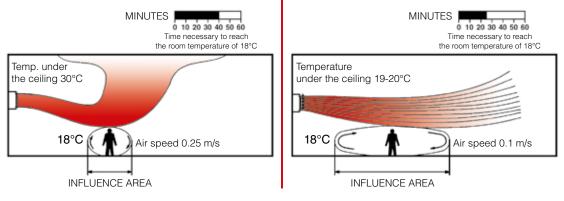
with maximum amortization in two seasons.

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 <u>WITHOUT</u> induction flow optimizer

Air flow produced by a unit heater <u>WITH</u> 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

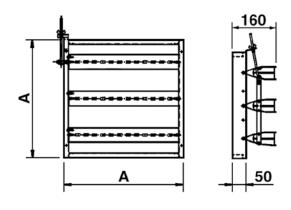
of the fins and for them to be locked using a special threaded rod.

The motorized version is supplied

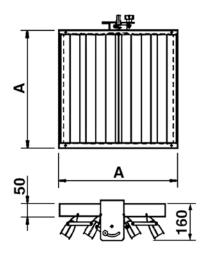
with single phase motor that can be controlled by the remote switch.

Dimensions and Weight

• (HORIZONTAL DISCHARGE)



▼ (UERTICAL DISCHARGE)



| MO | DEL | А | WEIGHT |
|---------------|---------------|------|--------|
| | | mm | Kg |
| 0 - 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 |
| 0 - 7 | V - 7 | 793 | 2,6 |
| O - 8 | V - 8 | 900 | 3,0 |
| O - 9 | V - 9 | 1010 | 3,4 |
| O - 10 | V - 10 | 1117 | 3,7 |

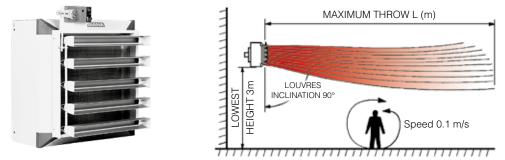
Controls





Mounting heights and Air throw

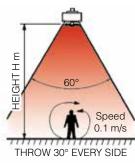
a) Wall installation for horizontal discharge:

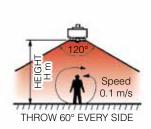


| SABIANA | | | MAXIMUM T | HROW L (m) | | |
|-------------|------|----------------|-----------|------------|----------------|----|
| UNIT HEATER | W | ITHOUT JETSTRE | AM | | WITH JETSTREAN | I |
| SIZE | 4P | 6P | 8P | 4P | 6P | 8P |
| 1 | 7,5 | 5 | 4,5 | 12 | 8 | - |
| 2 | 10 | 7 | 5,5 | 16 | 11 | - |
| 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:







| SABIANA | | | | INSTAL | LATION HEIGH | HT H (m) | | | | |
|-------------|------|-------------|------|--------|--------------|----------|------------------------|-----|----|--|
| UNIT HEATER | WITH | IOUT JETSTI | REAM | WITH | JETSTREAM | AT 60° | WITH JETSTREAM AT 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

Control Control Contr

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



Technical characteristics of the main components:

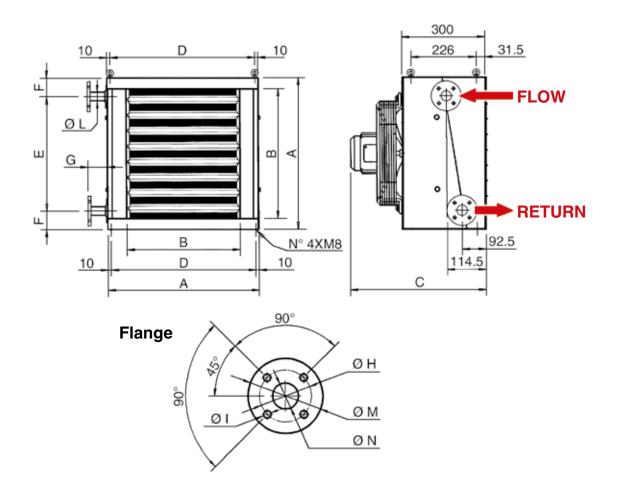
- The main casing is manufactured from AISI 304 stainless steel, 1 mm thick.
- The adjustable louvres are held firm by spring loaded pivots and they are mounted in horizontal position on the front part of the unit.
- Coil: the fins are pressed from aluminium sheet, bonded onto the AISI 304 stainless 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: 46142

| 46 | l. | 4 | 2 |
|--------------------|-------|------|------|
| MOTOR 4/6 POLE | RANGE | SIZE | ROWS |
| (1350/1000 r.p.m.) | AIX | 4 | 2 |

Dimensions, Weight, Water content



| MODEL | ٨ | В | C | П | г | г | GØ | αц | מו מו | Ø | (ALA | ØN | W | WEIGHT Kg WATER CONTENT Liters | | | |
|------------|------|-----|-----|-----|-----|------|----|-----|-------|--------|------|----|---|--------------------------------|----|-----|-----|
| INIUDEL | A | D | U | D | С | Г | G | חש | ØI | ØL | UIVI | | 1 | R | 2R | 1R | 2R |
| 46 21-22 | 526 | 393 | 468 | 506 | 330 | 98 | 66 | 65 | 14 | 1 ½ | 95 | 15 | 2 | 6 | 30 | 1,7 | 2,5 |
| 46 41-42 | 636 | 501 | 468 | 616 | 497 | 69.5 | 66 | 85 | 14 | 1" | 115 | 25 | 3 | 3 | 38 | 2,9 | 4,2 |
| 46 61-62 | 743 | 609 | 468 | 723 | 588 | 44.5 | 56 | 100 | 18 | 1 1⁄4" | 140 | 32 | 4 | 5 | 51 | 5,3 | 5,9 |
| 68 91-92 | 1011 | 877 | 576 | 991 | 832 | 89.5 | 87 | 110 | 18 | 1 1⁄2" | 150 | 40 | 8 | 2 | 92 | 8,2 | 12 |



AIX TECHNICAL SPECIFICATIONS

m

dB(A)

kW

Leaving air

temp. °C

kW

Leaving air

temp. °C

11

59

13

33.2

18.9

41.5

HEATING EMISSION

Throw

Noise level at 5 m (*)

Water temperature 85/75°C

Entering air temperature +15°C

Water temperature 130/100°C

Entering air temperature +15°C

| 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 | m³/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 | 14.3 | 11.9 | 23.4 | 19.8 | 37 | 31 | 68.4 | 60.5 |
| 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 | 16.5 | 13.8 | 27 | 22.9 | 42.7 | 35.9 | 79 | 70 |
| 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 | 42 | 46 | l 62 | 68 | 92 |
| ounting 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 | m³/h | 2100 | 1400 | 3600 | 2400 | 6300 | 4100 | 9200 | 7000 |

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

7.5

51

10.6

37.3

15.4

47.3

16

64

21.1

32.2

30.2

39.7

12

54

17.2

36.1

24.7

45.3

25

69

36.5

32

53.3

39.9

18

60

29.3

36

43

45.8

28

68

59.2

33.9

84.1

41.9

21

62

51.4

36.6

74

46.1



| 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 2-ST without thermostat 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.

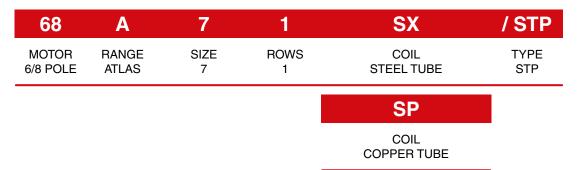


Technical characteristics of the main components:

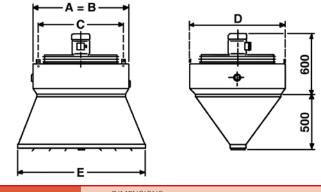
- The main casing is manufactured from galvanized prepainted steel finished in light grey colour (RAL 9002), and is assembled from three component parts, which are assembled using self-tapping screws in order to allow quick maintenance on the coil.
- Fishtail diffuser produced from steel sheet with manually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



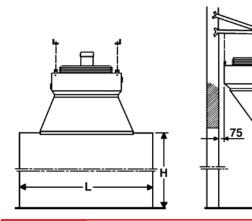
Dimensions, Weight, Water content



| | | DIMEN | ISIONS | | ROWS | WEIGHT | WATER |
|------|------|-------|--------|------|-------|--------|---------|
| SIZE | A=B | С | D | E | 10003 | WLIGHT | CONTENT |
| | | n | าท | | | kg | Liters |
| _ | | | | 1000 | 1 | 62 | 4.3 |
| 7 | 793 | 696 | 793 | | 2 | 70 | 8.2 |
| _ | | | | | 3 | 76 | 12.3 |
| | | 803 | | | 1 | 75 | 5.8 |
| 8 | 900 | | 900 | 1200 | 2 | 86 | 11.1 |
| | | | | | 3 | 93 | 16.6 |
| | | | | | 1 | 90 | 7.6 |
| 9 | 1010 | 913 | 1010 | 1400 | 2 | 104 | 14.5 |
| | | | | | 3 | 113 | 21.8 |

Correct selection of the door curtain

0



| 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 |



Atlas STP TECHNICAL **S**PECIFICATIONS

ENTERING AIR TEMPERATURE 15°C

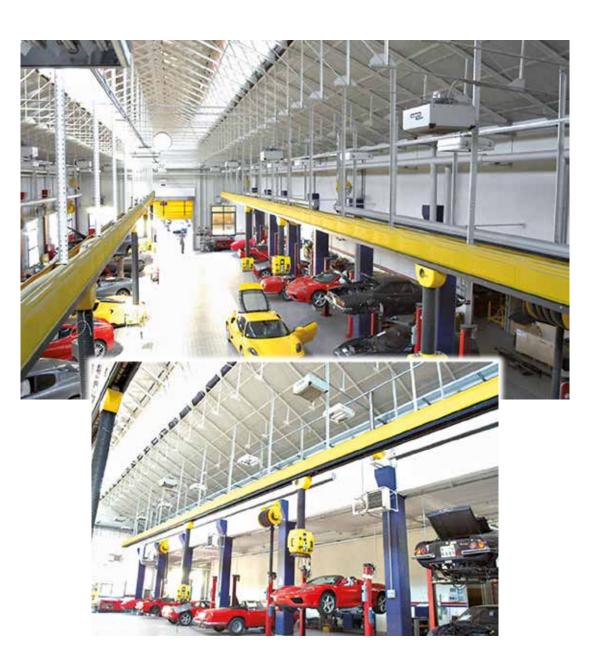
| | | MO | TOR | | | |)ISE VEL | | | | EMIS | SION | | | | |
|------|-----------|-----|-------|------|------|----|-------------------|-------|-------|-------------------|------|--------|--------------------------------|------------------|--------------------|--|
| | | SPI | SPEED | | LOW | | 5 m. *) | W | | MPERATUI 70°C | RE | W | WATER TEMPERATURE 140-100°C | | | |
| SIZE | MODEL | r.p | .m. | m | ³/h | dB | 8(A) | k | W | LEAVIN TEMPERA | | k' | N | LEAVI TEMPER/ | NG AIR ATURE °C | |
| | | | | | | | | | POLE | S | | | | | | |
| | | 6 | 8 | 6 | 8 | 6 | 8 | 6 | 8 | 6 | 8 | 6 | 8 | 6 | 8 | |
| | 68A71/STP | 900 | 750 | 4435 | 3440 | 69 | 63 | - | - | - | - | 39,42 | 35,03 | 41,0 | 44,8 | |
| 7 | 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 | - | - | - | - | |
| | 68A81/STP | 900 | 750 | 6655 | 4700 | 69 | 64 | - | - | - | - | 50,62 | 43,35 | 37,2 | 42,0 | |
| 8 | 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 | - | - | - | - | |
| | 68A91/STP | 900 | 750 | 9220 | 6610 | 70 | 65 | - | - | - | - | 70,80 | 61,10 | 37,5 | 42,0 | |
| 9 | 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 5m, directional factor Q = 2, compliant with the EN 3744 standard.



No-Strat Anti-stratification and Heat Economiser Unit

O-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 m³/h.

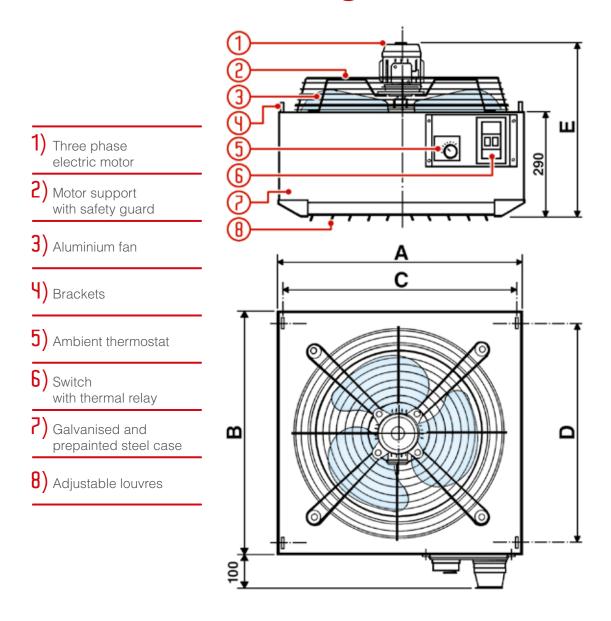


Technical characteristics of the main components:

- 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<mark>10-Stra</mark>

Dimensions and Weight



| MO | DEL | А | В | С | 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 |



NO-STRAT Technical Specifications

| MODEL | MOTOR SPEED r.p.m. | AIR FLOW m³/h | INSTALLATION HEIGHT m | SURFACE m ² | NOISE LEVEL AT 5 m. (*) dB(A) |
|-----------|--------------------------|------------------|-----------------------------|---------------------------|--|
| DNS-450/4 | 1400 | 4.300 | 4,5 ÷ 6,5 | 100 | 61 |
| DNS-450/6 | 900 | 2.800 | 3,5 ÷ 6 | 60 | 52 |
| DNS-500/4 | 1400 | 5.500 | 5 ÷ 8 | 150 | 66 |
| DNS-500/6 | 900 | 3.750 | 4÷8 | 90 | 56 |
| DNS-550/4 | 1400 | 6.300 | 6,5 ÷ 9 | 200 | 69 |
| DNS-550/6 | 900 | 4.600 | 5 ÷ 8,5 | 120 | 60 |
| DNS-650/6 | 900 | 9.100 | 6,5 ÷ 11 | 300 | 67 |
| DNS-750/6 | 900 | 13.200 | 7 ÷ 13 | 400 | 68 |

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

No-Strat



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.

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





Technical characteristics of the main components:

- 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

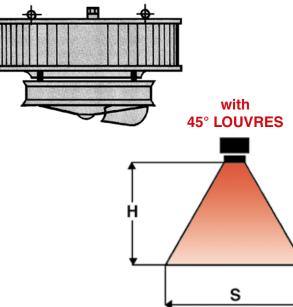
| 6 | Z | 4 | 15 |
|------------------------------|---------------|------|----------------|
| MOTOR 6 POLE (900 r.p.m.) | RANGE COMFORT | SIZE | N° OF CIRCUITS |

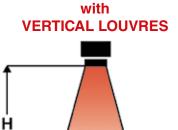
—— "DRA" radial diffuser



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





s

| | | • | | | | | | | | | |
|------|------------------|-----------------|------------------|-----------------|---|--|--|--|--|--|--|
| | | 1400 r.p.m. N | IOTOR SPEED | | 900 r.p.m. MOTOR SPEED | | | | | | |
| SIZE | 45° LC | UVRES | VERTICAL | LOUVRES | 45° LOUVRES VERTICAL LOUVRES | | | | | | |
| | H suggested m | S diameter m | H suggested m | S diameter m | H suggested S diameter H suggested S diameter m m 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 | | | | | | |

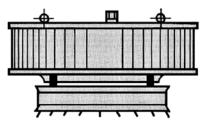


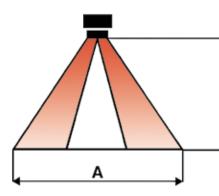


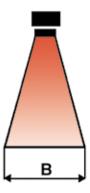
It is designed to give a two way or corridor distribution, suitable for corridor or gangway areas, between storage racks etc., generally mounted at any height depending upon the length of corridor required.

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Mounting heights and area of air distribution



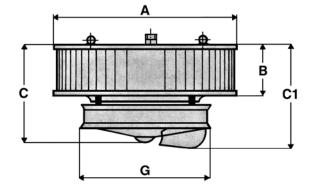


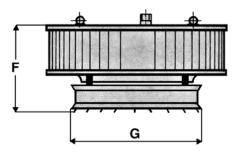


| | 1400 r.p.m. I | NOTOR SPEED | 900 r.p.m. MOTOR SPEED | | | | | | |
|------|---------------|--------------|------------------------|---------------|--|--|--|--|--|
| SIZE | H suggested | ZONE m | H suggested | ZONE m | | | | | |
| | m | A B | m | A B | | | | | |
| 0 | 3 ÷ 6 | 15x6 ÷ 10x4 | 2.5 ÷ 5 | 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 | | | | | |

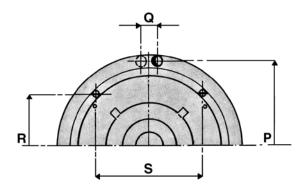
Dimensions, Weight, Water content

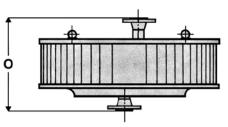
<u>DRA</u>





T2





Version with PN 16 flanges

| SIZE | А | В | С | C1 | F | G | 0 | Р | Q | R | S | CONNECTIONS Ø | WEIGHT Kg | WATER CONTENT Liters |
|------|------|-----|-----|------|-----|-----|-----|------|----|-----|-----|------------------|--------------|-------------------------|
| 0 | 680 | 180 | 430 | 560 | 380 | 560 | 331 | 612 | 62 | 350 | 350 | 1 1⁄4" | 31 | 1,20 |
| 1 | 780 | 180 | 430 | 560 | 380 | 560 | 331 | 702 | 62 | 421 | 421 | 1 1⁄4" | 36 | 1,30 |
| 2 | 780 | 280 | 530 | 660 | 480 | 560 | 431 | 702 | 62 | 421 | 421 | 1 1⁄4" | 42 | 1,90 |
| 3 | 880 | 280 | 530 | 700 | 480 | 660 | 435 | 802 | 68 | 491 | 491 | 1 1⁄2" | 52 | 2,40 |
| 4 | 880 | 380 | 630 | 760 | 580 | 660 | 535 | 802 | 68 | 491 | 491 | 1 1⁄2" | 58 | 3,20 |
| 5 | 1080 | 380 | 630 | 870 | 580 | 760 | 539 | 1005 | 80 | 755 | 440 | 2" | 75 | 4,30 |
| 6 | 1080 | 455 | 705 | 945 | 655 | 760 | 614 | 1005 | 80 | 755 | 440 | 2" | 85 | 5,20 |
| 7 | 1080 | 555 | 805 | 1045 | 755 | 760 | 714 | 1005 | 80 | 755 | 440 | 2" | 95 | 5,90 |
| 8 | 1080 | 555 | 815 | 1055 | 765 | 760 | 714 | 1005 | 80 | 755 | 440 | 2" | 97 | 5,90 |
| 9 | 1080 | 605 | 865 | 1105 | 815 | 760 | 765 | 1005 | 80 | 755 | 440 | 2" | 106 | 6,50 |

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



COMFORT TECHNICAL

Specifications

WATER TEMPERATURE 85-75°C Drop 10°C - Entering air temperature 15°C

| SIZE | MOTOR SPEED | MODEL REF. | AIR FLOW | NOISE LEVEL AT 5 m. (*) | EMISSION | LEAVING AIR TEMPERATURE |
|------|----------------|---------------|----------|---|----------|-------------------------------|
| | r.p.m. | | m³/h | dB(A) | W | °C |
| Û | 1400 | 4Z-007 | 3.000 | 56 | 24.400 | 39 |
| 1 | 1400 | 4Z-107 | 3.400 | 60 | 28.400 | 39 |
| 2 | 1400 | 4Z-211 | 5.100 | 63 | 41.800 | 39 |
| 3 | 1400 | 4Z-311 | 6.000 | 65 | 48.800 | 39 |
| 4 | 1400 | 4Z-415 | 7.800 | 66 | 64.400 | 39 |
| 0 | 900 | 6Z-007 | 2.000 | 48 | 19.100 | 43 |
| 1 | 900 | <i>6Z-107</i> | 2.400 | 52 | 22.100 | 42 |
| 2 | 900 | 6Z-211 | 3.700 | 54 | 32.700 | 41 |
| 3 | 950 | 6Z-311 | 4.400 | 55 | 38.000 | 40 |
| 4 | 950 | 6Z-415 | 5.700 | 56 | 50.200 | 41 |
| 5 | 930 | 6Z-515 | 7.100 | 63 | 61.500 | 40 |
| 6 | 930 | 6Z-618 | 9.000 | 64 | 77.800 | 40 |
| 7 | 930 | 6Z-722 | 9.900 | 65 | 92.000 | 42 |
| 8 | 930 | 6Z-822 | 11.000 | 65 | 107.000 | 44 |
| 9 | 930 | <i>6Z-924</i> | 12.000 | 66 | 115.100 | 44 |

Thermal emission with motor running at 700 r.p.m.: Watt = 0.85 x Watt with motor at 900 r.p.m.

Air = 0.70 x air flow with motor at 900 r.p.m.

(*) = The sound pressure levels dB(A) are measured at a distance of 5m, 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.

he 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 of the main components:

- 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.

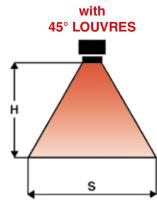


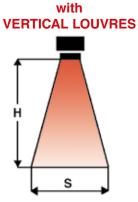
—— "DRA" radial diffuser

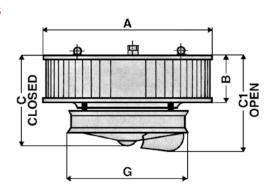
Made of eight separately adjustable large louvres, shaped so as to be able to cover the whole outlet area and therefore adaptable for minimum to maximum heights. This diffuser allows the air to be directed more easily to the areas where it is required most, or conversely, if you do not require air to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

Mounting heights and area of air distribution

Dimensions, Weight, Water content







| SIZE | 45° L0 | 900 r.p.m. M UVRES | OTOR SPEED VERTICAL | | DIMENSIONS | | | | | WEIGHT | WATER CONTENT | |
|------|------------------|-----------------------|------------------------|-----------------|------------|---------|---------|----------|---------|------------------|------------------|--------|
| | H suggested m | S diameter m | H suggested m | S diameter m | Amm | B mm | C mm | C1 mm | G mm | CONNECTIONS Ø | ka | Liters |
| 0 | 2.5 ÷ 4 | 10.5 ÷ 16.5 | 3.5 ÷ 5 | 6 ÷ 9 | 680 | 180 | 430 | 560 | 560 | 1 1⁄4" | 31 | 1,20 |
| 1 | 3 ÷ 4.5 | 12 ÷ 18 | 4 ÷ 5.5 | 7.5 ÷ 10.5 | 780 | 180 | 430 | 560 | 560 | 1 1⁄4" | 36 | 1,30 |
| 3 | 3.5 ÷ 5.5 | 15 ÷ 22.5 | 5 ÷ 7 | 9 ÷ 13.5 | 880 | 280 | 530 | 700 | 660 | 1 1⁄2" | 52 | 2,40 |
| 4 | 3.5 ÷ 6 | 15 ÷ 24 | 5.5 ÷ 8 | 10.5 ÷ 15 | 880 | 380 | 630 | 760 | 660 | 1 1⁄2" | 58 | 3,20 |
| 5 | 4 ÷ 6.5 | 16.5 ÷ 25.5 | 5.5 ÷ 8.5 | 10.5 ÷ 15 | 1080 | 380 | 630 | 870 | 760 | 2" | 75 | 4,30 |
| 6 | 4 ÷ 8 | 16.5 ÷ 28.5 | 6 ÷ 10 | 12 ÷ 18 | 1080 | 455 | 705 | 945 | 760 | 2" | 85 | 5,20 |
| 7 | 4 ÷ 8 | 16.5 ÷ 28.5 | 6 ÷ 10 | 12 ÷ 18 | 1080 | 555 | 805 | 1045 | 760 | 2" | 95 | 5,90 |
| 8 | 5 ÷ 11 | 18 ÷ 31.5 | 6.5 ÷ 14 | 13.5 ÷ 19.5 | 1080 | 555 | 815 | 1055 | 760 | 2" | 97 | 5,90 |
| 9 | 5 ÷ 11 | 18 ÷ 33 | 6.5 ÷ 14 | 13.5 ÷ 21 | 1080 | 605 | 865 | 1105 | 760 | 2" | 106 | 6,50 |



POLARIS TECHNICAL SPECIFICATIONS

| SIZE | SIZE MOD. | NOISE LEVEL AT 5 m. (*) | | AIR FLOW | | HEATING: Water temperature 85/70°C - Entering air temperature 15°C | | | | | |
|------|-----------|--------------------------------------|------------|------------|------------|--|------------|----------------------|------------|--|--|
| | | dB | (A) | m³/h | | | 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 | 2.000 | 1.400 | 17.600 | 15.100 | 41 | 47 | | |
| 1 | P.107 | 52 | 49 | 2.400 | 1.680 | 20.400 | 17.400 | 40 | 46 | | |
| 3 | P.311 | 55 | 52 | 4.400 | 3.080 | 35.300 | 30.000 | 38 | 44 | | |
| 4 | P.415 | 56 | 53 | 5.700 | 4.000 | 46.700 | 39.600 | 39 | 44 | | |
| 5 | P.515 | 63 | 58 | 7.100 | 4.970 | 57.100 | 48.500 | 39 | 44 | | |
| 6 | P.618 | 64 | 59 | 9.000 | 6.300 | 72.200 | 61.400 | 38 | 44 | | |
| 7 | P.722 | 65 | 60 | 9.900 | 6.930 | 85.600 | 72.700 | 40 | 46 | | |
| 8 | P.822 | 65 | 60 | 11.000 | 7.700 | 99.500 | 84.500 | 43 | 48 | | |
| 9 | P.924 | 66 | 61 | 12.000 | 8.400 | 106.700 | 90.700 | 42 | 47 | | |

| SIZE | MOD. | AT § | LEVEL 5 m. *) | AIR F | LOW | Relative Hu | LING: ımidity 55% · Entering air temperature 28°C |
|------|-------|------------|----------------------------|------------|------------|-------------|--|
| | | dB | (A) | m | ³/h | 1 | N |
| | | 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 | 2.000 | 1.400 | 3.100 | 2.700 |
| 1 | P.107 | 52 | 49 | 2.400 | 1.680 | 4.000 | 3.500 |
| 3 | P.311 | 55 | 52 | 4.400 | 3.080 | 7.500 | 6.600 |
| 4 | P.415 | 56 | 53 | 5.700 | 4.000 | 10.900 | 9.500 |
| 5 | P.515 | 63 | 58 | 7.100 | 4.970 | 13.600 | 11.900 |
| 6 | P.618 | 64 | 59 | 9.000 | 6.300 | 17.200 | 15.000 |
| 7 | P.722 | 65 | 60 | 9.900 | 6.930 | 18.900 | 16.500 |
| 8 | P.822 | 65 | 60 | 11.000 | 7.700 | 22.000 | 19.000 |
| 9 | P.924 | 66 | 61 | 12.000 | 8.400 | 23.700 | 20.600 |

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



Janus Air Conditioner

JANUS unit heaters can be used to economically cool industrial, commercial and sporting facilities, transforming a traditional heating system using unit heaters into a system that can also be used in the summer months, significantly improving the working conditions. The condensate collection tray is built into the appliance, while two-speed motors are fitted as standard. Upon request, controls with thermostat can also be supplied. The Janus unit heaters are made in 4 sizes, each with 3 and 4 row coils, for a total of 8 models, with heat outputs from 16 to 104 kW and cooling capacities from 5 to 28 kW.

Upon request, all sizes are available with the **innouatiue 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.



Technical characteristics of the main components:

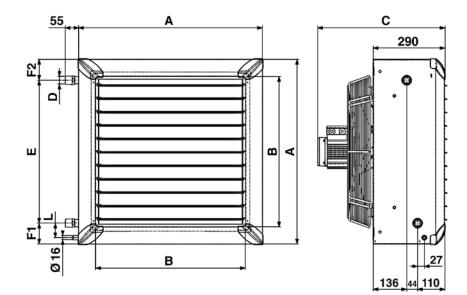
- The main casing is manufactured from galvanized prepainted steel (1 mm thick) finished in light grey (RAL 9002), and it is assembled from three component parts, assembled with self-tapping screws for quick maintenance on the heat coil. The use of hot dip galvanised and pre-painted steel ensures consistency and excellent protection against corrosion.
- The standard motor fitted is a hermetically sealed and is maintenance free. The motor is 2 speeds, 3 phase, single voltage 400V/50Hz, protection IP55, class B, with klixon thermal protection that is triggered in the event of overheating. The rotation speed can be reduced by passing from delta to star connection.
- Coil with large heating surfaces with copper pipe and in aluminium fins.
- The condensate collection tray is fitted inside the unit. Made from galvanized steel insulated with polyolefin (PO) foam (class M1).

JANUS identification code

Reference: 46F43

| 46 | F | 4 | 3 |
|--------------------------------------|-------------|------|------|
| MOTOR 4/6 POLE (1350/1000 r.p.m.) | RANGE JANUS | SIZE | ROWS |

Dimensions, Weight, Water content



CONTENT Liters

4R 2,2 3,4 5,1 9,8

| MODEL | А | В | С | D | F | F1 | F2 | I | WEIG | HT Kg | WATER |
|------------|------|-----|-----|--------|-----|----|-----|----|------|-------|-------|
| MUDEL | A | D | U | D | E | ГІ | ГΖ | L | 3R | 4R | 3R |
| 46 F 23/24 | 526 | 390 | 500 | 1" | 376 | 78 | 71 | 58 | 25,0 | 26,0 | 1,7 |
| 46 F 43/44 | 634 | 498 | 500 | 1" | 476 | 76 | 83 | 58 | 32,5 | 34,0 | 2,7 |
| 68 F 63/64 | 742 | 606 | 525 | 1" | 576 | 83 | 83 | 58 | 42,5 | 44,5 | 4,0 |
| 68 F 93/94 | 1010 | 874 | 650 | 1 1⁄4" | 818 | 90 | 100 | 67 | 77,0 | 81,0 | 7,6 |

JANUS TECHNICAL SPECIFICATIONS

HEATING EMISSION

| MODEL | | | 6 23 | | 6 24 | | 6 43 | | 6 44 | | 8 63 | 6 F | 8 64 | | 8 93 | | 8 94 |
|--------------------------------------|-------------------------|---------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-----------|---------|-------|---------|--------|---------|
| 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 | 1350 | 1000 | 950 | 750 | 950 | 750 | 950 | 750 | 950 | 750 |
| Air flow | m³/h | 2000 | 1365 | 1800 | 1270 | 3450 | 2290 | 3100 | 2000 | 3930 | 3050 | 3510 | 2650 | 7500 | 5800 | 6800 | 5100 |
| Throw | m | 11 | 7,5 | 10 | 6,5 | 16 | 12 | 15 | 11 | 16 | 12 | 15 | 11 | 26 | 20 | 25 | 19 |
| Noise level at 5 m (*) | dB(A) | 59 | 51 | 59 | 51 | 64 | 54 | 64 | 54 | 60 | 52 | 60 | 52 | 66 | 60 | 66 | 60 |
| Water temperature 45/40°C ∆t 5°C | kW | 8,47 | 6,65 | 9,66 | 7,62 | 14,44 | 11,15 | 16,55 | 12,27 | 18,81 | 15,77 | 20,67 | 16,95 | 37,97 | 32,04 | 42,29 | 34,43 |
| Entering air temp. +15°C | Leaving air temp. °C | 27,4 | 29,3 | 30,7 | 32,6 | 27,3 | 29,2 | 30,6 | 32,9 | 29,0 | 30,4 | 32,2 | 33,7 | 29,8 | 31,2 | 33,2 | 34,8 |
| Water temperature 85/75°C ∆t 10°C | kW | 20,75 | 16,23 | 23,58 | 18,52 | 35,15 | 27,08 | 40,14 | 29,66 | 45,46 | 38,07 | 49,79 | 40,75 | 92,37 | 77,80 | 102,66 | 83,31 |
| Entering air temp. +15°C | Leaving air temp. °C | 43,4 | 49,8 | 53,3 | 57,7 | 44,8 | 49,6 | 52,9 | 58,4 | 48,8 | 52,1 | 56,5 | 60,0 | 51,0 | 54,2 | 59,2 | 62,8 |
| Water temperature 90/70°C ∆t 20°C | kW | 19,86 | 15,63 | 22,76 | 18,00 | 33,86 | 26,26 | 39,04 | 29,10 | 44,38 | 37,26 | 48,95 | 40,28 | 89,39 | 75,66 | 100,11 | 81,73 |
| Entering air temp. +15°C | Leaving air temp. °C | 44,0 | 48,5 | 52,0 | 56,5 | 43,7 | 48,5 | 51,8 | 57,6 | 48,0 | 51,3 | 55,8 | 59,5 | 49,9 | 53,2 | 58,1 | 61,9 |

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



JANUS TECHNICAL SPECIFICATIONS

COOLING EMISSION

| MODEL | | 46 F 23 | 46 F 24 | 46 F 43 | 46 F 44 | 68 F 63 | 68 F 64 | 68 F 93 | 68 F 94 |
|-----------------------------------|-------------------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Mounting height | m | 2.5 | ÷ 4 | 3 ÷ | 4.5 | 3 - | ÷ 5 | 3.5 - | ÷ 5.5 |
| Speed | r.p.m. | 1000 | 1000 | 1000 | 1000 | 750 | 750 | 750 | 750 |
| Air flow | m³/h | 1365 | 1270 | 2290 | 2000 | 3050 | 2650 | 5800 | 5100 |
| Throw | m | 7,5 | 6,5 | 12 | 11 | 12 | 11 | 20 | 19 |
| Noise level at 5 m (*) | dB(A) | 51 | 51 | 54 | 54 | 52 | 52 | 60 | 60 |
| Water | kW Total | 5,00 | 6,08 | 8,62 | 10,28 | 13,08 | 15,28 | 23,24 | 26,89 |
| temperature 7/12°C ∆t 5°C | kW Sensible | 3,57 | 4,14 | 6,05 | 6,78 | 8,79 | 9,78 | 16,09 | 17,75 |
| Entering air temp. +28°C R.H. 55% | Leaving air temp. °C | 20,1 | 18,1 | 20,0 | 17,7 | 19,9 | 16,8 | 19,6 | 17,4 |
| Water | kW Total | 3,57 | 4,27 | 6,21 | 7,32 | 9,33 | 10,89 | 16,56 | 19,08 |
| temperature 11/15°C ∆t 4°C | kW Sensible | 3,25 | 3,62 | 5,43 | 5,86 | 7,61 | 8,28 | 14,28 | 15,38 |
| Entering air temp. +28°C R.H. 55% | Leaving air temp. °C | 20,8 | 19,4 | 20,8 | 19,1 | 20,3 | 18,5 | 20,5 | 18,9 |
| Water | kW Total | 4,02 | 4,90 | 6,93 | 8,34 | 10,62 | 12,51 | 18,76 | 21,74 |
| temperature 9/14°C ∆t 5°C | kW Sensible | 3,31 | 3,79 | 5,51 | 6,11 | 7,91 | 8,75 | 14,66 | 16,07 |
| Entering air temp. +28°C R.H. 55% | Leaving air temp. °C | 20,6 | 19,0 | 20,7 | 18,7 | 20,0 | 18,0 | 20,3 | 18,4 |

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

Accessories

| | | 2 WAY VALVE | ACTUATOR |
|------|---|-------------|----------|
| VA2V | 2 way valve Composed by: – one 2-way valve – one ON-OFF 230V actuator | | 8 |
| VA3V | 3 way valve Composed by: – one 3-way valve – one ON-OFF 230V actuator | 3 WAY VALVE | ACTUATOR |

Accessories

| KIT-VA | Extension kit To be used with water valves (mandatory). | |
|--------|---|--|
| AMP | Wall bracket. | |
| AD | 4 way diffuser. To be used when discharging downflow to create a 4 way discharge pattern. | |
| ARC | Simple intake hood fitted underneath. Wall bracket included. 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. | |



Accessories

| 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. | |
| APP | Ball protection grid. | |
| AG | External air intake grille suitable with AE and AES air boxes. Prepainted steel thickness 1 mm. | |

Controls





Élegant ECM Ceiling Air Conditioner

to heat and cool very economically small and medium areas, like shops, show rooms, workshops, supermarkets.

he range is made up of 12 models: **RE–ECM** version, for heating only, is made up of **8 models**, and **PE–ECM** version, for heating and cooling, is made up of **4 models**. All models are for ceiling installation and for hot/chilled water supply.



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 10 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.

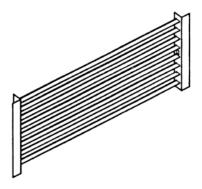
Construction features

Casing made of steel on both top and bottom sections and it is then finished with an epoxy-polyester powder coating dried at 180°, 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.

<u>Outlet grids</u>

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.



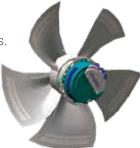
Electronic motor

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.

<u>Helicoidal fan</u>

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.

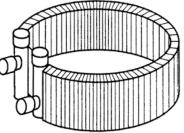


<u>Coil</u>

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.

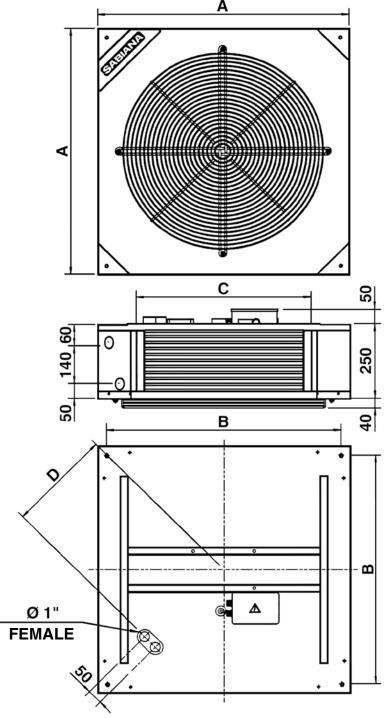


Condensate micro-pump

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.



Dimensions, Weight, Water content



| With 2 ROW COIL (heating and cooling) | | | | | | | | | | | |
|--|--|-----------------|-----|-----|-----|--|--|--|--|--|--|
| MODEL | | RE-ECM / PE-ECM | | | | | | | | | |
| MUDEL | (heating and a second s | | 22 | 32 | 42 | | | | | | |
| | А | 600 | 750 | 750 | 830 | | | | | | |
| | В | 540 | 690 | 690 | 770 | | | | | | |
| DIMENSIONS (mm) | С | 330 | 480 | 480 | 560 | | | | | | |
| | D | 220 | 287 | 300 | 344 | | | | | | |
| WEIGHT (kg) | | 28 | 34 | 35 | 40 | | | | | | |
| WATER CONTENT (Li | ters) | 1.8 | 2.4 | 2.4 | 2.7 | | | | | | |

| L | | ROW I heatin | | | |
|--------------------|-------|-----------------|-----|-----|-----|
| MODEL | | | RE- | ECM | |
| MODEL | | 11 | 21 | 31 | 41 |
| | А | 600 | 750 | 750 | 830 |
| DIMENSIONS (mm) | В | 540 | 690 | 690 | 770 |
| | С | 330 | 480 | 480 | 560 |
| | D | 220 | 287 | 300 | 344 |
| WEIGHT (kg) | | 26 | 31 | 32 | 38 |
| WATER CONTENT (Lit | iers) | 0.8 | 1.1 | 1.1 | 1.3 |

Elegant ECII

ELEGANT TECHNICAL SPECIFICATIONS

– 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—E(| CM 1 [.] | 1 | RE-ECM 12 | | | | | | |
|------------------------|-------|------|------|-------|-------------------|------|-----------|------|-------|-------|-------|-------|-------|
| Inverter Power (V) | | 5 | 6 | 7 | 8 | 9 | 10 | 5 | 6 | 7 | 8 | 9 | 10 |
| Air flow | m³/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 | 6,9 | 8,8 | 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 | 24 | 37 | 51 | 69 | 81 | 16 | 24 | 37 | 51 | 69 | 81 |

| MODEL | | | | RE-E | CM 2 [.] | 1 | RE-ECM 22 | | | | | | |
|------------------------|-------|------|------|------|-------------------|-------|-----------|-------|-------|-------|-------|-------|-------|
| Inverter Power (V) | | 5 | 6 | 7 | 8 | 9 | 10 | 5 | 6 | 7 | 8 | 9 | 10 |
| Air flow | m³/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 | 36 | 55 | 75 | 104 | 136 | 23 | 36 | 55 | 75 | 104 | 136 |

| MODEL | | | RE-ECM 31 | | | | RE-ECM 32 | | | | | | |
|------------------------|-------|------|-----------|-------|-------|-------|-----------|-------|-------|-------|-------|-------|-------|
| Inverter Power (V) | | 5 | 6 | 7 | 8 | 9 | 10 | 5 | 6 | 7 | 8 | 9 | 10 |
| Air flow | m³/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 | 37 | 59 | 86 | 121 | 162 | 164 | 37 | 59 | 86 | 121 | 162 | 164 |

| MODEL | | | RE-ECM 41 | | | | RE-ECM 42 | | | | | | |
|------------------------|-------|-------|-----------|-------|-------|-------|-----------|-------|-------|-------|-------|-------|-------|
| Inverter Power (V) | | 5 | 6 | 7 | 8 | 9 | 10 | 5 | 6 | 7 | 8 | 9 | 10 |
| Air flow | m³/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 | 32 | 54 | 77 | 108 | 150 | 174 | 32 | 54 | 77 | 108 | 150 | 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 1500m³, reverberation period of 2 s, directional factor Q=2 (hemisphere sound emission)



ELEGANT TECHNICAL SPECIFICATIONS

- PE-ECM units (heating and cooling) -

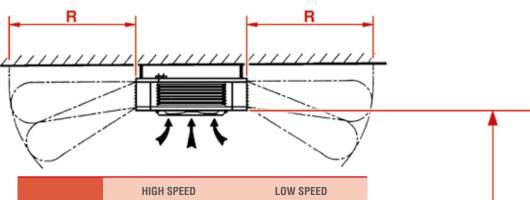
<u>COOLING</u> (summer mode)

Entering air temperature:+27°C d.b.R.H. 50%Water temperature:+ 7°C E.W.T.+12°C L.W.T.

<u>HEATING</u> (winter mode) Entering air temperature: +20°C Water temperature: +70°C E.W.T. +60°C L.W.T.

| MODEL | | | | PE-E | CM 12 | 2 | | | | PE-E(| 6,74 7,13 7,38 5,68 6,12 6,44 1 17,13 18,31 19,20 1 19,4 21,5 22,9 | | | |
|---------------------------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|--|-------|-------|--|
| Inverter Power (V) | | 5 | 6 | 7 | 8 | 9 | 10 | 5 | 6 | 7 | 8 | 9 | 10 | |
| Air flow | m³/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 | 24 | 37 | 51 | 69 | 81 | 23 | 36 | 55 | 75 | 104 | 136 | |

| MODEL | | | | PE-E | CM 32 | 2 | | b F | | | | | |
|---------------------------|-------|-------|-------|-------|-------|-------|-------|---|-------|-------|-------|-------|-------|
| Inverter Power (V) | | 5 | 6 | 7 | 8 | 9 | 10 | 5 | 6 | 7 | 8 | 9 | 10 |
| Air flow | m³/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 | 37 | 59 | 86 | 121 | 162 | 164 | 32 | 54 | 77 | 108 | 150 | 174 |



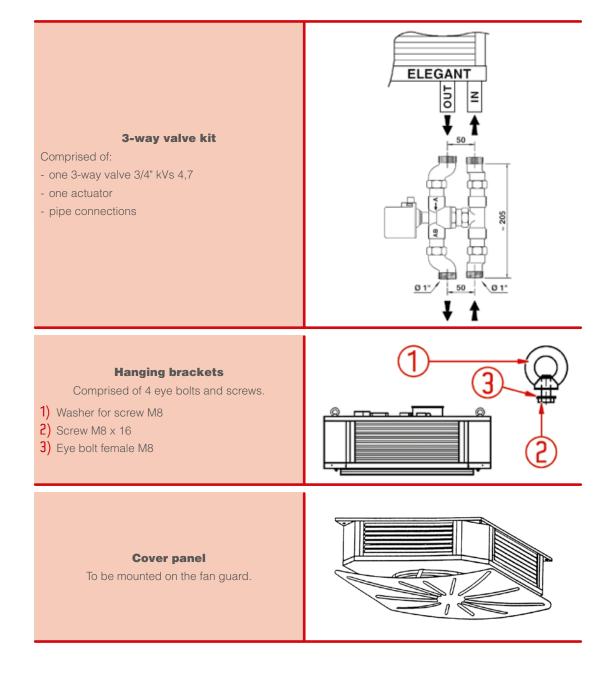
| | HIGH S | SPEED | LOW S | PEED |
|-------|-------------------|---------|-------------------|---------|
| MODEL | Maximum height | Surface | Maximum height | Surface |
| | (m) | (m) | (m) | (m) |
| | Н | R | Н | R |
| 1 | 3.5 | 3.5 | 3.0 | 2.5 |
| 2 | 3.5 | 3.8 | 3.0 | 2.6 |
| 3 | 4.0 | 4.0 | 3.5 | 3.0 |
| 4 | 4.5 | 4.5 | 4.0 | 3.5 |

Elegant ECI

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Accessories





<u>Wall</u> electronic controls

For each unit must be prouided 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-MB | Wall control (to be used with UPEM-AU or UPE-AU only) |
| TM0-503-SV2 | Automatic speed control with electronic thermostat to be mounted in the DIN 503 box (to be used with ADC-M or ADC-S 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, TMO-503-SV2 and T2T controls |
| ADC-S | ADC signal converter for wall controls supplied with separate packaging, for WM-3V, WM-T, WM-TQR, TMO-503-SV2 and T2T controls |
| UPEM-AU | Power unit for WM-AU and T-MB remote controls, fitted on the unit |
| 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-MB | Wall control (to be used with MBE board only) |
| PSM-DI | Multifunction control (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 | | | | | | |
| SIOS | Relay output board for Sabianet | | | | | | |



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 uersions** 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.

hanks 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.

Technical characteristics of the main components:

<u>Cabinet:</u> it consists of cold galvanised steel plate panels painted with oven-dried epoxy powders, colour RAL 9003. The side closures are made of plastic.

<u>Fan assembly:</u> 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/LI Models: it consists of double inlet centrifugal fans directly fitted on the motor shaft.

Electric motor: U/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 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 uersions 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. U/LU-ECM models are equipped with 1 row coil, LC/LI models are equipped with 2 row coils. Maximum water temperature 80°C, maximum operating pressure 10 bar.

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

<u>Electronic controls</u>: the units come with integrated control system specifically designed for every type of operation (see Page 115).

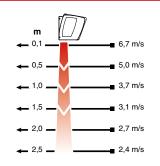
LU Model

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

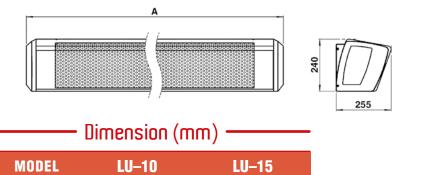
The unit comes with integrated control system specifically designed for every type of operation: **LU–A:** air ventilation only, it is equipped with a control located on board, which can be easily accessed from the bottom. This includes a step-by-step control button to switch the device on and off and 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-MB 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 1Ph or 400V 3Ph **LU-15E** 6 kW 400V 3Ph 1 row hot water coil Complete with electrical connection cable with Schuko CEE 7/7 plug



Dimensions, Weight, Water content



| | Weight (kg) | | | | | | | | | |
|-------|-------------|-------------|--------------|--------------------------|--|--|--|--|--|--|
| | WEIGHT WITI | H PACKAGING | WEIGHT WITHO | 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 | | | | | | |

1644

| Water content (litres) | | | | | | | | |
|------------------------|-------|-------|--|--|--|--|--|--|
| MODEL | LU-10 | LU–15 | | | | | | |
| | 0,65 | 0,95 | | | | | | |

11///



TECHNICAL SPECIFICATIONS

UENTILATION 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 | m³/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 | |
| Motor absorption | А | 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 | m³/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 | |
| | А | 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 | m³/h | 1260 | 760 | 1260 | 760 | 1900 | 1090 |
| Electric resistance - 1 st stage | kW | 2 | 2 | 2 | 2 | 3 | 3 |
| Electric resistance - 2 nd 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 |
| 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 – 1 st stage | А | 8,7 | 8,7 | 3,0 | 3,0 | 4,5 | 4,5 |
| Electric resistance absorption – 2 nd stage | А | 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 3m, directional factor Q = 2, according to EN 3744.

LU-ECM Model

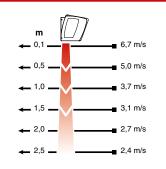
The LU-ECM series door curtains have been designed for installation **near small** entrances of offices and commercial enuironments.



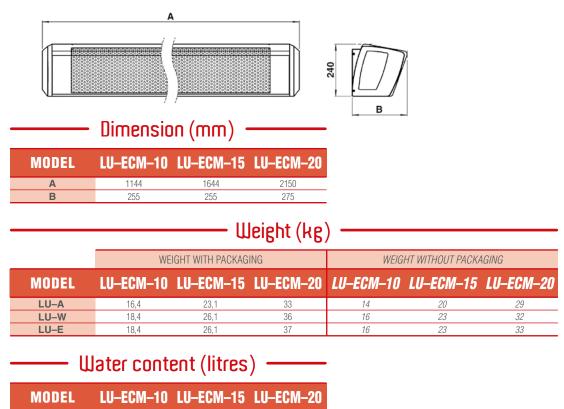
The unit comes with integrated control system specifically designed for every type of operation: **LU–ECM–A**: air ventilation only. It is equipped with a remote control system (supplied with the unit) or it can be combined with a wall mounted T-MB control with display (optional). **LU–ECM–UJ/E**: operation 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-MB control with display (optional).

Recommended installation height: 2.5 metres Installation: horizontal Lengths available: 1 and 1.5 and 2 metres Electric resistance: LU-ECM-10E 3 kW 230V 1Ph or 400V 3Ph 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



Dimensions, Weight, Water content



1.30



0.65

0.95

TECHNICAL SPECIFICATIONS

UENTILATION only

| MODEL | MODEL LU-ECM- | | M–10A | –10A LU–ECM–15A | | | M–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 | m³/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 | 49,8 | 165 | 53,5 |
| | А | 0,55 | 0,22 | 0,92 | 0,42 | 1,3 | 0,46 |
| Weight | kg | 14 | 14 | 20 | 20 | 29 | 29 |

with HOT WATER COIL

| MODEL | | LU–EC | M–10W | LU–EC | M–15W | LU–ECI | M–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 | m³/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 ~ |
| Motor observisor | W | 46,9 | 19,8 | 81,2 | 36,4 | 120,5 | 38,5 |
| Motor absorption | 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- | -10 E -230 | LU-ECM- | -10 E -400 | LU-EC | M–15E | LU-EC | M-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 | m³/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 |
| | А | 0,43 | 0,19 | 0,43 | 0,19 | 0,75 | 0,35 | 1,06 | 0,39 |
| Electric resistance absorption 1st stage | А | 8,7 | 8,7 | 3,0 | 3,0 | 4,5 | 4,5 | 4,5 | 4,5 |
| Electric resistance absorption 2 nd stage | А | 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 |

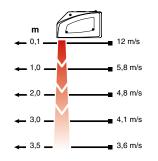
(*) = Air temperature 18°C - Water temperature 80/60°C.
 (**) = Air temperature 18°C - Water temperature 60/40°C.
 (***) = The sound pressure levels dB(A) are measured at a distance of 3m, directional factor Q = 2, according to EN 3744.

LC Model

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

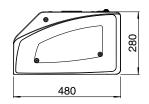
The unit comes with integrated control system specifically designed for every type of operation: LC-A: air ventilation only, it is provided with wall mounted remote control. The control allows to switch the door barrier on and off and to set the speed required (high or low) by pressing a step-by-step button. LC-U/E: operation with hot water or electric coil. The unit comes with remote control with T-MB 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



Dimensions, Weight, Water content

| | Dimensio | Dimension (mm) | | | | |
|-------|----------|----------------|-------|--|--|--|
| MODEL | LC-10 | LC–15 | LC-20 | | | |
| Α | 1125 | 1625 | 2160 | | | |



| | WEIGHT WITH PACKAGING WEIGHT WITHOUT PACK | | | | | | | | |
|-------|---|-------|-------|-------|-------|-------|--|--|--|
| 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 | | | |





TECHNICAL SPECIFICATIONS

UENTILATION only

| MODEL | LC- | LC–10A | | LC-15A | | 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 ~ |
| Water character W | 330 | 230 | 400 | 200 | 660 | 460 |
| Motor absorption A | 1,57 | 1,15 | 1,80 | 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 ~ |
| Weter elegentian W | 330 | 230 | 400 | 200 | 660 | 460 |
| Motor absorption A | 1,57 | 1,15 | 1,80 | 1,00 | 3,14 | 2,30 |
| Weight kg | 36 | 36 | 47 | 47 | 68 | 68 |

with ELECTRIC RESISTANCE

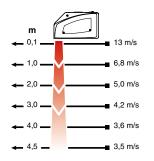
| MODEL | | LC- | 10E | LC- | 15 E | LC- | 20E |
|--|-------|------------|------------|------------|-------------|------------|------------|
| Speed | | max | min | max | min | max | min |
| Installation height | m | 3,5 | 3,5 | 3,5 | 3,5 | 3,5 | 3,5 |
| Length | mm | 1125 | 1125 | 1625 | 1625 | 2160 | 2160 |
| Air flow | m³/h | 2100 | 1200 | 3150 | 1500 | 4200 | 2400 |
| Electric resistance - 1 st stage | kW | 4 | 4 | 6 | 6 | 8 | 8 |
| Electric resistance - 2 nd 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 |
| Motor observice | W | 330 | 230 | 400 | 200 | 660 | 460 |
| Motor absorption | А | 1,57 | 1,15 | 1,80 | 1,00 | 3,14 | 2,30 |
| Electric resistance absorption – 1 st stage | А | 6 | 6 | 9 | 9 | 12 | 12 |
| Electric resistance absorption – 2 nd stage | А | 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 3m, directional factor Q = 2, according to EN 3744.

LI Model

The UI 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: UI-R: 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. UI-W/E: operation with hot water or electric coil. The unit comes with remote control with T-MB 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



Dimensions, Weight, Water content

| | A | | | |
|-------|-----------|-------|--------------|--|
| | Dimensio | | 410 | |
| | DIFICISIO | | | |
| MODEL | LI-10 | LI-15 | LI-20 | |
| A | 1150 | 1650 | 2185 | |

| | 410 |
|-----|-----|
| 650 | |

| | | U | leight (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 | |

| <u> </u> | ater cont | ent (litres |) —— | | | | | | | | | | |
|----------|-------------------------|-------------|------|--|--|--|--|--|--|--|--|--|--|
| MODEL | MODEL LI-10 LI-15 LI-20 | | | | | | | | | | | | |
| | 1,65 | 2,55 | 3,40 | | | | | | | | | | |



TECHNICAL SPECIFICATIONS

UENTILATION only

| MODEL | LI- | 10A | u- | 15A | u- | 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 ~ |
| Motor absorption W | 600 | 400 | 940 | 520 | 1200 | 800 |
| A 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

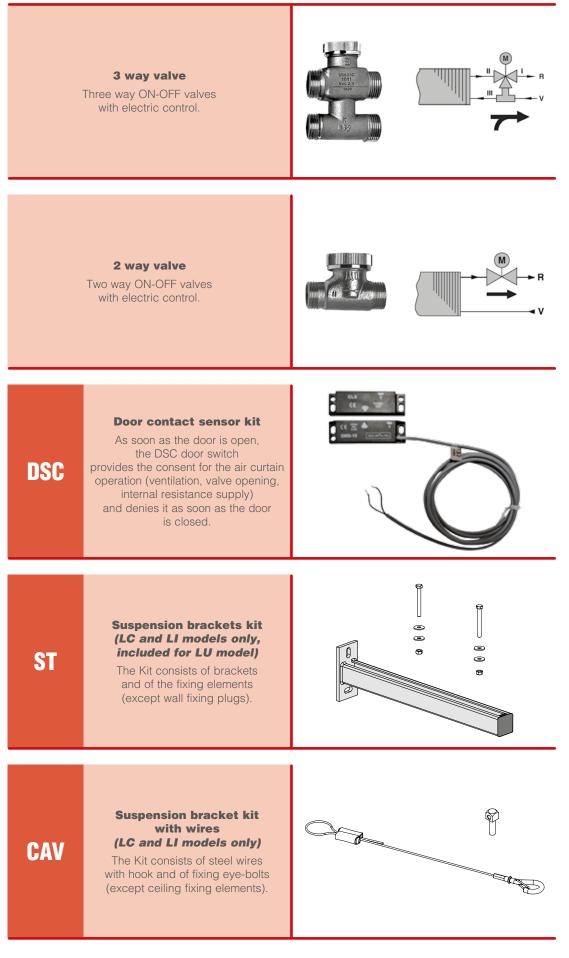
| MODEL | LI- | 10W | LI- | 15W | LI-2 | 20W |
|----------------------------|---------|---------|---------|---------|---------|---------|
| Speed | max | min | max | min | max | min |
| Installation height m | 4,5 | 4,5 | 4,5 | 4,5 | 4,5 | 4,5 |
| Length mm | 1150 | 1150 | 1650 | 1650 | 2185 | 2185 |
| 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 ~ |
| Motor absorption | 600 | 400 | 940 | 520 | 1200 | 800 |
| A 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 | | u- | 10 E | 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 | m³/h | 3500 | 2600 | 5500 | 3250 | 7000 | 5200 |
| Electric resistance - 1 st stage | kW | 7 | 7 | 12 | 12 | 14 | 14 |
| Electric resistance - 2 nd 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 |
| Matar abaaratian | W | 600 | 400 | 940 | 520 | 1200 | 800 |
| Motor absorption - | А | 2,63 | 1,80 | 4,20 | 2,40 | 5,26 | 3,60 |
| Electric resistance absorption – 1 st stage | А | 10,2 | 10,2 | 17,5 | 17,5 | 20,5 | 20,5 |
| Electric resistance absorption – 2 nd stage | А | 16 | 16 | 26,1 | 26,1 | 32 | 32 |
| 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 3m, directional factor Q = 2, according to EN 3744.

Accessories





Electronic controls



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





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 and Ll models



LC-W/E and LI-W/E Control systems

The units are equipped, as standard.

with electronic board and T-MB control to manage: • ON/OFF unit.

- Fan speed selection.
- Operating mode selection.
- (ventilation only or with heating coil).
- Air temperature set-point configuration.
- 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.













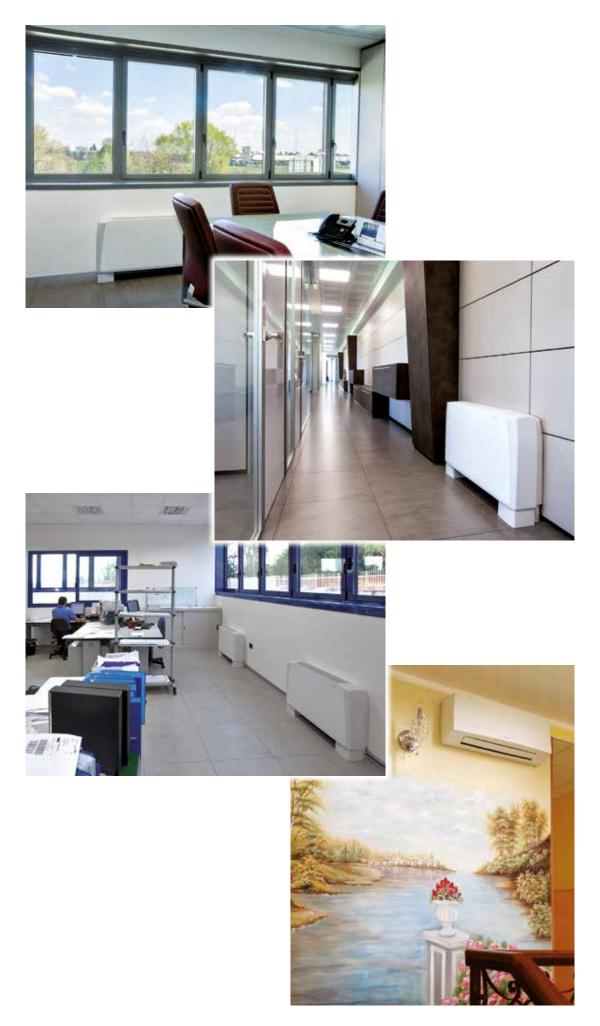






















Sabiana has been making fan coils since 1980, units that stand out for their attractive design and very low noise and power consumption, responding to current demand for energy sauing and indoor comfort.

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 (IRQ)** 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.

Fan Coils

n 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 **inuerter-driuen** brushless 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 much more precise control over indoor temperature.

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



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.

Carisma Fan Coil Unit

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.

pon 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.

he 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.

R s a special option, the Carisma range can be fitted with the Crystall 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.

R full range of controls is available, including the innovative Free patented wireless system, for rapidly obtaining correct ambient temperature and desired performances and comfort.

he 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.



Carisma CRC Fan Coil Unit with Centrifugal Fan with Asynchronous Motor

Range includes **9 air flow rates** (from 105 to 1500 m³/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.

t 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 of the main components:

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 galvanized steel insulated with polyolefin (PO) foam (class M1).

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 1/2inch 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

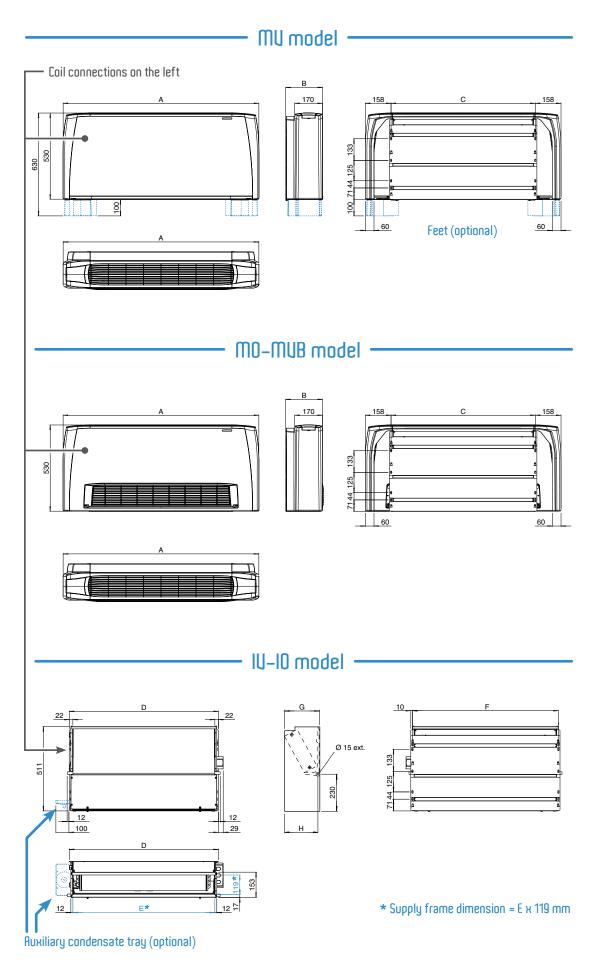
the unit. On request we can deliver the unit with the connections on the right end side. This operation can also be easily carried out on site during installation.

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 polyolefin (PO) foam (class M1).

The outside diameter of the condensate discharge pipe is 15 mm.



Dimensions, Weight, Water content



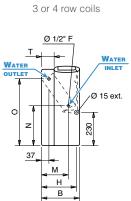


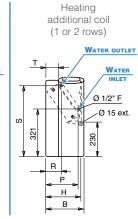
Carisma CRC

Dimensions, Weight, Water content

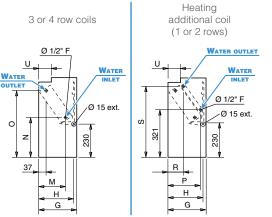
- Coil connections

MU and MO-MUB model





IU-IO model



Dimension (mm) ·

| MODEL | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-------|-----|-----|-----|-----|------|------|------|------|------|
| A | 670 | 770 | 985 | 985 | 1200 | 1200 | 1415 | 1415 | 1415 |
| В | 225 | 225 | 225 | 225 | 225 | 225 | 225 | 255 | 255 |
| С | 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 |
| Н | 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 |
| 0 | 460 | 460 | 460 | 460 | 460 | 460 | 460 | 450 | 450 |
| Р | 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 |
| Т | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 85 | 85 |
| U | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 95 | 95 |

- Weight (kg) -

| | | | | | WEI | GHT W | /ITH P. | ACKAC | GING | | | | | WEIGH | IT WIT | HOUT | PACK | AGING | ì | |
|------|------|-------|------|------|------|-------|---------|-------|------|------|------|------|------|-------|--------|------|------|-------|------|----------|
| | N | IODEL | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | g |
| ШВ | | 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 |
| | S | 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 |
| | ROWS | 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 |
| ģ | £ | 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 |
| | | 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 |
| 0 | S | 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 |
| 0 -1 | ROWS | 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 |
| 2 | œ | 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) -

| N | IODEL | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 3 | 0,5 | 0,6 | 0,9 | 0,9 | 1,3 | 1,6 | 1,7 | 1,9 | 1,9 |
| NS | 4 | 0,7 | 0,8 | 1,3 | 1,3 | 1,7 | 2,2 | 2,4 | 2,8 | 2,8 |
| ROW | +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 |





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:** +50°C Water flow rate as for the cooling conditions

| MOD | EL | | | CRO | C 13 | | | | | CRC | 23 | 3 | | | | CRC | 33 | 3 | |
|--------------------------|-------------------------|--------------|------|------|--------------|------|--------------|-------|------|--------------|------|--------------|------|------|--------------|--------------|------|--------------|------|
| Grand | | 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 |
| Speed | | MIN | | | MED | | MAX | MIN | | MED | | MAX | | | MIN | MED | | MAX | |
| Air flow | m³/h | 105 | 125 | 150 | 175 | 195 | 220 | 145 | 170 | 220 | 250 | 295 | 340 | 185 | 235 | 270 | 325 | 385 | 440 |
| Cooling total emission | (E) kW | 0,59 | 0,68 | 0,77 | 0,86 | 0,94 | 1,03 | 0,91 | 1,01 | 1,25 | 1,38 | 1,56 | 1,74 | 1,28 | 1,57 | 1,78 | 2,07 | 2,39 | 2,66 |
| Cooling sensible emiss | ion (E) kW | 0,47 | 0,54 | 0,62 | 0,71 | 0,78 | 0,86 | 0,69 | 0,77 | 0,97 | 1,08 | 1,24 | 1,40 | 0,94 | 1,15 | 1,32 | 1,55 | 1,80 | 2,02 |
| Heating (E) | kW | 0,76 | 0,90 | 1,02 | 1,15 | 1,26 | 1,39 | 1,12 | 1,27 | 1,59 | 1,77 | 2,02 | 2,28 | 1,52 | 1,87 | 2,15 | 2,52 | 2,92 | 3,27 |
| 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 | 0,9 | 1,1 | 1,4 | 1,7 | 2,0 | 2,3 | 2,5 | 3,0 | 4,4 | 5,3 | 6,5 | 7,9 | 6,6 | 9,4 | 11,8 | 15,4 | 19,7 | 23,8 |
| Dp Heating (E) | kPa | 0,8 | 0,9 | 1,2 | 1,4 | 1,7 | 2,0 | 2,1 | 2,6 | 3,7 | 4,5 | 5,5 | 6,7 | 5,6 | 8,0 | 10,0 | 13,1 | 16,7 | 20,2 |
| 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 | 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 |
| coil (Water 70/60°C) | 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 | | | | CRO | ; 43 | 3 | | | | CR | C 53 | } | | | | CRC | 63 | 3 | |
|-------------------------------------|--------|------|--------------|--------------|------|--------------|------|------|--------------|------|--------------|--------------|------|-------|------|--------------|------|--------------|------|
| Cread | | 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 |
| Speed | | | MIN | MED | | MAX | | | MIN | | MED | | MAX | MIN | | MED | | MAX | |
| Air flow | m³/h | 185 | 265 | 335 | 400 | 485 | 570 | 250 | 315 | 420 | 495 | 545 | 650 | 415 | 505 | 590 | 680 | 760 | 830 |
| Cooling total emission (E) | kW | 1,27 | 1,73 | 2,14 | 2,46 | 2,87 | 3,24 | 1,68 | 2,03 | 2,58 | 2,94 | 3,18 | 3,64 | 2,54 | 2,99 | 3,37 | 3,77 | 4,09 | 4,35 |
| Cooling sensible emission (E) | kW | 0,93 | 1,28 | 1,60 | 1,86 | 2,19 | 2,51 | 1,24 | 1,51 | 1,94 | 2,23 | 2,43 | 2,82 | 1,91 | 2,27 | 2,59 | 2,93 | 3,20 | 3,44 |
| Heating (E) | kW | 1,50 | 2,09 | 2,61 | 3,02 | 3,56 | 4,06 | 1,98 | 2,42 | 3,13 | 3,59 | 3,89 | 4,50 | 3,07 | 3,66 | 4,13 | 4,68 | 5,09 | 5,45 |
| 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 | 5,5 | 9,5 | 13,8 | 17,7 | 23,1 | 28,7 | 3,5 | 4,9 | 7,5 | 9,4 | 10,8 | 13,8 | 7,3 | 9,7 | 12,0 | 14,6 | 16,8 | 18,8 |
| 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 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 |
| coil (Water 70/60°C) 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 |

| MODE | L | | | (| CRO | ; 73 | | | | (| CRO | C 83 | | | | | CR | C 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) |
| Speed | | | | MIN | | MED | | MAX | | MIN | | MED | | MAX | | MIN | | MED | | MAX |
| Air flow | | m³/h | 445 | 535 | 630 | 735 | 840 | 925 | 510 | 655 | 815 | 1020 | 1100 | 1200 | 735 | 830 | 980 | 1210 | 1365 | 1500 |
| Cooling total emission (E |) | kW | 2,87 | 3,34 | 3,80 | 4,29 | 4,76 | 5,11 | 3,06 | 3,74 | 4,41 | 5,19 | 5,47 | 5,82 | 4,08 | 4,47 | 5,06 | 5,87 | 6,36 | 6,74 |
| Cooling sensible emission | n (E) | kW | 2,13 | 2,50 | 2,87 | 3,27 | 3,66 | 3,95 | 2,32 | 2,88 | 3,44 | 4,12 | 4,37 | 4,68 | 3,16 | 3,49 | 4,00 | 4,73 | 5,19 | 5,55 |
| Heating (E) | | kW | 3,41 | 4,01 | 4,60 | 5,19 | 5,80 | 6,27 | 3,84 | 4,80 | 5,61 | 6,74 | 7,15 | 7,66 | 5,21 | 5,71 | 6,54 | 7,72 | 8,47 | 9,06 |
| 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 | 7,3 | 10,3 | 13,8 | 18,4 | 20,2 | 22,5 | 11,9 | 13,8 | 17,3 | 22,4 | 25,9 | 28,6 |
| Dp Heating (E) | | kPa | 10,5 | 13,8 | 17,3 | 21,3 | 25,6 | 29,1 | 6,2 | 8,8 | 11,8 | 15,6 | 17,3 | 19,2 | 10,2 | 12,0 | 14,9 | 19,1 | 22,5 | 24,6 |
| 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 He | eating (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 |
| coil (Water 70/60°C) Dj | p 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 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 Entering water temperature: +50°C Water flow rate as for the cooling conditions

Certification

| MOD | EL | | | | CRO | C 14 | ļ | | | | CRC | 24 | ļ | | | | CRC | 34 | ļ | |
|----------------------------------|---------------------|-------|--------------|------|------|--------------|------|--------------|--------------|------|--------------|------|--------------|------|------|--------------|--------------|------|--------------|------|
| Canad | | | 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 |
| Speed | | | MIN | | | MED | | MAX | MIN | | MED | | MAX | | | MIN | MED | | MAX | |
| Air flow | | m³/h | 105 | 125 | 150 | 175 | 195 | 220 | 145 | 170 | 220 | 250 | 295 | 340 | 185 | 235 | 270 | 325 | 385 | 440 |
| Cooling total emission (| E) | kW | 0,67 | 0,78 | 0,89 | 1,02 | 1,11 | 1,23 | 1,01 | 1,13 | 1,43 | 1,59 | 1,81 | 2,04 | 1,34 | 1,65 | 1,89 | 2,21 | 2,57 | 2,88 |
| Cooling sensible emission (E) kW | | kW | 0,51 | 0,60 | 0,68 | 0,79 | 0,87 | 0,97 | 0,74 | 0,83 | 1,07 | 1,19 | 1,38 | 1,57 | 0,96 | 1,20 | 1,38 | 1,62 | 1,90 | 2,14 |
| Heating (E) kW | | kW | 0,82 | 0,96 | 1,10 | 1,27 | 1,39 | 1,55 | 1,18 | 1,34 | 1,72 | 1,92 | 2,20 | 2,50 | 1,56 | 1,94 | 2,23 | 2,63 | 3,07 | 3,46 |
| Heating - Water 70-60°C | 3 | 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 | 9,2 | 11,0 | 13,9 | 17,2 | 3,7 | 5,3 | 6,7 | 8,9 | 11,5 | 14,1 |
| Dp Heating (E) | | kPa | 1,5 | 2,0 | 2,6 | 3,3 | 3,9 | 4,7 | 3,9 | 4,9 | 7,5 | 9,2 | 11,6 | 14,6 | 2,9 | 4,2 | 5,4 | 7,0 | 9,2 | 11,3 |
| 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) | | 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 | 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 |
| coil (Water 70/60°C) | 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 | | | | CRO | ; 44 |) | | | | CR | C 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 | m³/h | 185 | 265 | 335 | 400 | 485 | 570 | 250 | 315 | 420 | 495 | 545 | 650 | 415 | 505 | 590 | 680 | 760 | 830 |
| Cooling total emission (E) kW | | 1,32 | 1,83 | 2,28 | 2,65 | 3,12 | 3,56 | 1,79 | 2,19 | 2,83 | 3,25 | 3,54 | 4,09 | 2,83 | 3,38 | 3,86 | 4,38 | 4,79 | 5,13 |
| Cooling sensible emission (E) kW | | 0,95 | 1,34 | 1,68 | 1,97 | 2,34 | 2,69 | 1,30 | 1,60 | 2,08 | 2,40 | 2,63 | 3,07 | 2,07 | 2,49 | 2,86 | 3,27 | 3,60 | 3,87 |
| Heating (E) kW | | 1,54 | 2,16 | 2,72 | 3,17 | 3,76 | 4,34 | 2,06 | 2,53 | 3,30 | 3,81 | 4,17 | 4,83 | 3,39 | 4,07 | 4,69 | 5,35 | 5,88 | 6,35 |
| 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 | 2,5 | 4,6 | 6,9 | 9,0 | 12,2 | 15,6 | 5,7 | 8,3 | 13,1 | 17,0 | 19,9 | 25,7 | 11,0 | 15,2 | 19,5 | 24,7 | 29,3 | 33,5 |
| 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 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 |
| coil (Water 70/60°C) 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 | | | | CR | C 74 | | | | | CR | C 8 4 | | | | | CRO | ; 94 | | |
|----------------------------------|-------------------|------|--------------|------|--------------|-------|--------------|------|--------------|-------|--------------|-------|--------------|------|--------------|-------|--------------|--|--------------|
| Quand | | 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) |
| Speed | | | MIN | | MED | | MAX | | MIN | | MED | | MAX | | MIN | | MED | 0 1365 4 7,13 1 5,63 3 9,38 3 16,02 | MAX |
| Air flow | m³/h | 445 | 535 | 630 | 735 | 840 | 925 | 510 | 655 | 815 | 1020 | 1100 | 1200 | 735 | 830 | 980 | 1210 | 1365 | 1500 |
| Cooling total emission (E) | kW | 3,03 | 3,56 | 4,08 | 4,64 | 5,17 | 5,58 | 3,27 | 4,03 | 4,80 | 5,73 | 6,06 | 6,47 | 4,42 | 4,88 | 5,57 | 6,54 | 7,13 | 7,60 |
| Cooling sensible emission (E) kW | | 2,22 | 2,62 | 3,03 | 3,47 | 3,89 | 4,23 | 2,43 | 3,04 | 3,66 | 4,43 | 4,71 | 5,06 | 3,36 | 3,72 | 4,29 | 5,11 | 5,63 | 6,05 |
| Heating (E) kW | | 3,55 | 4,20 | 4,86 | 5,55 | 6,19 | 6,71 | 4,03 | 5,06 | 6,11 | 7,36 | 7,84 | 8,43 | 5,59 | 6,22 | 7,14 | 8,53 | 9,38 | 10,08 |
| 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 | 5,2 | 7,6 | 10,3 | 14,1 | 15,6 | 17,5 | 9,0 | 10,6 | 13,4 | 17,8 | 20,7 | 23,2 |
| Dp Heating (E) | kPa | 7,7 | 10,3 | 13,3 | 16,9 | 20,5 | 23,7 | 4,1 | 6,2 | 8,4 | 11,4 | 12,7 | 14,5 | 7,2 | 8,7 | 11,1 | 14,8 | 17,0 | 19,3 |
| 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 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 |
| coil (Water 70/60°C) Dp Hea | t. (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 m³ room and a reverberation time of 0.5 sec.



BREEZE Frame Kit for Wall Concealed Installation for Carisma CRC and CRR Fan Coil units

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

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

Technical characteristics of the main components:

The aesthetic frame includes: • the closing frame;

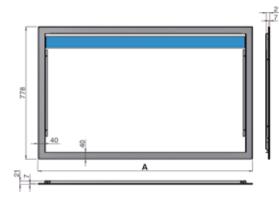
- air supply louvre;
- front panel;
- air intake grid.

The air supply louure 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°, colour RAL 9003. It is possible to repaint the entire frame of the same color as the wall.

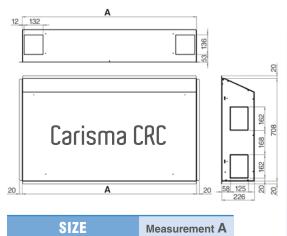
The recessed box is made of galvanized steel with opening for the electrical and hydraulic connections.

Aesthetic frame dimensions



| Measurement A |
|---------------|
| 837 |
| 1052 |
| 1267 |
| |

Recessed box dimensions



771

986

1201

2

3/4

5/6

| | 132 | 36 136 12 |
|----|-------------|-----------------|
| | Carisma CRR | 162 168 162 |
| 20 | Α | 20 43,5 125 0 R |
| | SIZE | Measurement A |
| | 2 | 771 |
| | 3 | 986 |
| | 4 | 1201 |



IAQ accessory (only for CRC/CRC-ECM version)

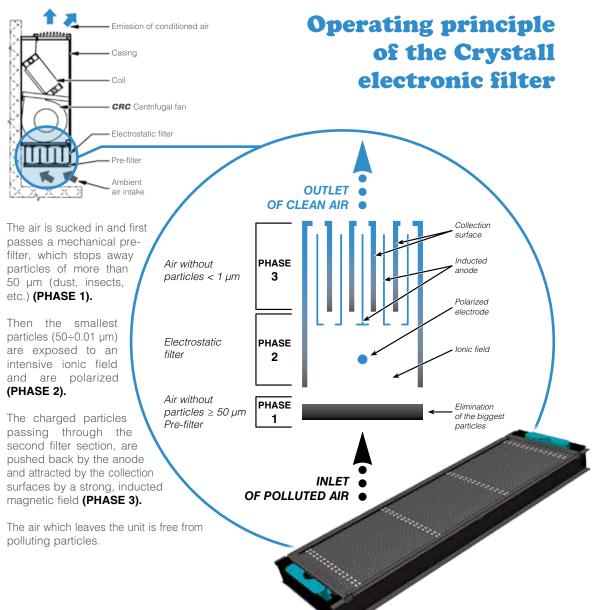
The **Crystall Sabiana** electrostatic filter matches the need for better air conditioning with the concepts of space and design.

With this filter the various stages of air treatment are combined in one appliance.

Thanks to this new patented filter (efficiency compliant with new Standard UNI 11254), air pollutants such as cigarette smoke, dust (PM10, PM2.5), 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.







Electronic controls <u>included</u>

– Standard MU-MUB 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.

<u>Wall</u> electronic controls

— Standard MU, MO-MUB and IU-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-MB | Wall control (to be used with UPM-AU or UP-AU only) |
| TM0-503-SV2 | Automatic speed control with electronic thermostat to be mounted in the DIN 503 box |
| T2T | Electromechanical thermostat with summer/winter switch (only for 2 pipe units) |
| UPM-AU | Power unit for WM-AU and T-MB remote controls, fitted on the unit |
| UP-AU | Power unit for WM-AU and T-MB remote controls, not fitted on the unit |

- FreeSabiana wireless control system -

| Free-Com | Remote control to be used with electronic boards described at page 267 |
|----------------|--|
| Free-Upm | Power unit fitted on the unit |
| Free-Ups | Power unit not fitted on the unit |
| Free-Sen | Temperature probe |
| CB-Free | ON/OFF control to be mounted on MV units |

Electronic controls for <u>MB boards</u>

| MB-M | MB electronic board fitted on the unit |
|---------|---|
| MB-S | MB electronic board supplied with separate packaging |
| T-MB | Wall control (to be used with MB board only) |
| T-MB-M | Control fitted on the unit, for MV/MVB models with left connections (available with right connections, to be used with MB board and UP-AU board only) |
| T-MB-S | Control supplied with separate packaging, for MV/MVB models with left connections (available with right connections, to be used with MB board and UP-AU board only) |
| RM-RT03 | RT03 infra-red remote control with fitted receiver, for MV/MO-MVB models (to be used with MB board only) |
| RS-RT03 | RT03 infra-red remote control with receiver supplied with separate packaging (to be used with MB board only) |
| RT03 | RT03 infra-red remote control supplied with separate packaging (to be used with MB board only) |
| RM | Ricevitore per telecomando RT03 montato in fabbrica, solo versioni MV / MO-MVB (utilizzabile solo con scheda MB) |
| RS | Receiver for RT03 infra-red remote control fitted on the unit, for MV/MO-MVB models (to be used with MB board only) |
| PSM-DI | Multifunction control (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 |
| SIOS | Relay output board for Sabianet |

NOTES: for more details about the Controls, see Page 263. for full list of main Accessories, see Page 273.





Built-in electronic control

Carisma CRC

<u>Wall</u> electronic control



WM-TQR





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 m³/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 R** 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.

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.

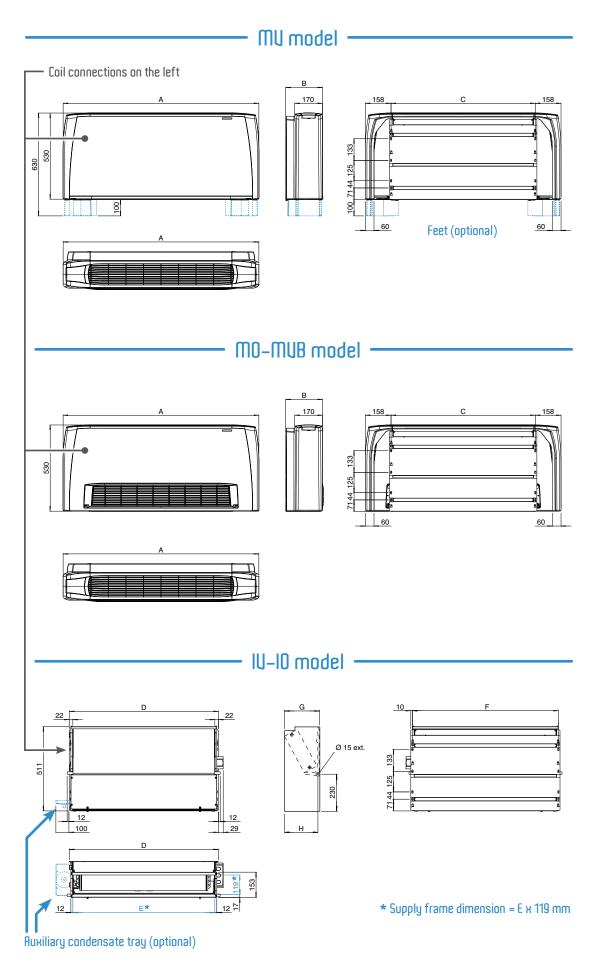
The full compliance with the Electromagnetic Compatibility Directive and with the other severe Standards in force is certified by an independent institute.

Technical characteristics of the main components:

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 – 240 U** and frequency of **50 – 60 Hz**.

Dimensions, Weight, Water content





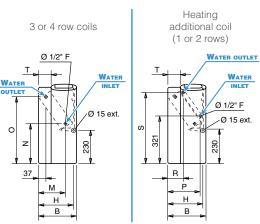
Carisma CRC-ECM

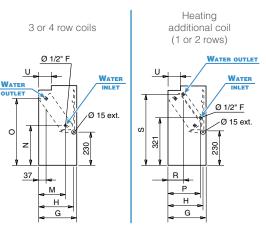
Dimensions, Weight, Water content

- Coil connections

MU and MO-MUB model







Dimension (mm)

| MODEL | 2 | 4 | 6 | 7 | 9 |
|-------|-----|-----|------|------|------|
| A | 770 | 985 | 1200 | 1415 | 1415 |
| В | 225 | 225 | 225 | 225 | 255 |
| С | 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 |
| Н | 205 | 205 | 205 | 205 | 235 |
| М | 145 | 145 | 145 | 145 | 170 |
| N | 260 | 260 | 260 | 260 | 270 |
| 0 | 460 | 460 | 460 | 460 | 450 |
| Р | 185 | 185 | 185 | 185 | 210 |
| R | 105 | 105 | 105 | 105 | 110 |
| S | 475 | 475 | 475 | 475 | 465 |
| Т | 55 | 55 | 55 | 55 | 85 |
| U | 65 | 65 | 65 | 65 | 95 |

- Weight (kg)

| | | | | WEIGHT | WITH PAC | KAGING | | WEIGHT WITHOUT PACKAGING | | | | | | |
|-----|------|-------|------|--------|----------|--------|------|--------------------------|------|------|------|------|--|--|
| | N | IODEL | 2 | 4 | 6 | 7 | 9 | 2 | 4 | 6 | 7 | 9 | | |
| B | | 3 | 17,2 | 22,5 | 27,7 | 32,1 | 35,9 | 15,4 | 20,2 | 24,9 | 28,8 | 32,2 | | |
| _ 2 | S | 3+1 | 18,0 | 23,7 | 29,2 | 33,9 | 37,7 | 16,2 | 21,4 | 26,4 | 30,6 | 34,0 | | |
| | ROWS | 3+2 | 18,6 | 24,4 | 30,1 | 35,0 | 38,8 | 16,8 | 22,1 | 27,3 | 31,7 | 35,1 | | |
| ģ | £ | 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 | | |
| | | 3 | 13,6 | 18,1 | 22,8 | 27,0 | 30,4 | 11,8 | 16,3 | 20,5 | 24,2 | 27,3 | | |
| | S | 3+1 | 14,4 | 19,3 | 24,3 | 28,8 | 32,2 | 12,6 | 17,5 | 22,0 | 26,0 | 29,1 | | |
| 1 | ROWS | 3+2 | 15,0 | 20,0 | 25,2 | 29,9 | 33,3 | 13,2 | 18,2 | 22,9 | 27,1 | 30,2 | | |
| 2 | æ | 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 |
|-------|----|-----|-----|-----|-----|-----|
| | 3 | 0,6 | 0,9 | 1,6 | 1,7 | 1,9 |
| WS | 4 | 0,8 | 1,3 | 2,2 | 2,4 | 2,8 |
| ROV | +1 | 0,2 | 0,3 | 0,5 | 0,5 | 0,6 |
| | +2 | 0,4 | 0,6 | 1,0 | 1,0 | 1,2 |





Units with 3 row coil -

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

<u>COOLING</u> (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:** +50°C Water flow rate as for the cooling conditions

| MODEL | | | CRC–ECM 23 | | | | CRC–ECM 43 | | | | CRC-ECM 63 | | | | | |
|------------------------------------|--------|------|------------|--------------|------|---------------|------------|------|--------------|------|---------------|--------------|------|--------------|------|---------------|
| Inverter Power (V) | | | 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 | | | | MED | | MAX | MIN | | MED | | MAX | MIN | | MED | | MAX |
| Air flow m³/h | | 120 | 170 | 220 | 270 | 330 | 210 | 280 | 350 | 430 | 515 | 305 | 395 | 495 | 610 | 735 |
| Cooling total emission (E) kW | | 0,74 | 0,98 | 1,19 | 1,39 | 1,61 | 1,42 | 1,80 | 2,19 | 2,58 | 2,97 | 1,97 | 2,45 | 2,94 | 3,46 | 3,99 |
| Cooling sensible emission (E) kW | | | 0,75 | 0,93 | 1,10 | 1,30 | 1,04 | 1,34 | 1,65 | 1,96 | 2,28 | 1,47 | 1,84 | 2,23 | 2,67 | 3,11 |
| Heating (E) kW | | 0,92 | 1,24 | 1,53 | 1,81 | 2,13 | 1,70 | 2,20 | 2,70 | 3,21 | 3,74 | 2,35 | 2,96 | 3,59 | 4,25 | 4,95 |
| Heating - Water 70-60°C | 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) | 2,2 | 3,7 | 5,0 | 6,6 | 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) | 2,0 | 3,6 | 5,0 | 6,5 | 8,3 | 6,6 | 9,9 | 13,8 | 18,2 | 23,9 | 4,5 | 6,7 | 9,2 | 12,1 | 15,7 | |
| Fan (E) | 7,0 | 9,0 | 11,0 | 14,5 | 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 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 |
| coil (Water 70/60°C) 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 |
| Energy classification FCEER (**) | | | C | | | | | Α | | | | | Α | | | |
| Energy classification FCCOP (*** | | | C | | | | | В | | | | | Α | | | |

| MODEL | | CRC | -ECI | VI 7 3 | 3 | 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 | | | 500 | 610 | 755 | 890 | 605 | 785 | 945 | 1175 | 1395 |
| Cooling total emission (E) kW | | | 3,14 | 3,70 | 4,39 | 4,98 | 3,47 | 4,25 | 4,86 | 5,67 | 6,36 |
| Cooling sensible emission (E) kW | | | 2,35 | 2,79 | 3,35 | 3,84 | 2,65 | 3,31 | 3,83 | 4,56 | 5,20 |
| Heating (E) kW | | | 3,76 | 4,47 | 5,32 | 6,09 | 4,45 | 5,53 | 6,41 | 7,62 | 8,69 |
| Heating - Water 70-60°C | 5,16 | 6,30 | 7,50 | 8,94 | 10,25 | 7,55 | 9,40 | 10,94 | 13,06 | 14,95 | |
| Dp Cooling (E) kPa | | | 14,5 | 19,4 | 26,1 | 32,6 | 8,9 | 12,7 | 16,1 | 21,1 | 25,9 |
| Dp Heating (E) kPa | | | 11,9 | 16,1 | 21,5 | 26,8 | 7,7 | 11,0 | 13,9 | 18,3 | 22,5 |
| Fan (E) | 9,0 | 13 | 18,5 | 28,5 | 41,0 | 16,0 | 25,0 | 41,0 | 65,0 | 99,0 | |
| Sound power (E) | 37 | 43 | 48 | 53 | 57 | 44 | 50 | 55 | 60 | 64 | |
| Sound pressure (*) dB(A) | | | 34 | 39 | 44 | 48 | 35 | 41 | 46 | 51 | 55 |
| 1 row heating additional Heating | (E) kW | 2,65 | 3,10 | 3,56 | 4,13 | 4,63 | 3,40 | 4,08 | 4,62 | 5,35 | 5,98 |
| coil (Water 70/60°C) Dp Heat. | (E) kPa | 2,9 | 3,9 | 4,9 | 6,4 | 7,8 | 4,6 | 6,3 | 7,8 | 10,1 | 12,3 |
| Energy classification FCEER (** | | | Α | | | | | В | | | |
| Energy classification FCCOP (** | | | А | | | | | В | | | |

- (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.

(******) **FCEER** = Energy classification in Cooling.

(***) FCCOP = Energy classification in Heating.







www.certiflash.com

Units with 4 row coil

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

<u>COOLING</u> (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:** +50°C Water flow rate as for the cooling conditions

| MODEL | 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 | m³/h | 115 | 160 | 210 | 260 | 325 | 200 | 265 | 340 | 415 | 505 | 290 | 375 | 475 | 590 | 720 | | | | | |
| Cooling total emission (E) | kW | 0,78 | 1,07 | 1,33 | 1,59 | 1,88 | 1,44 | 1,84 | 2,28 | 2,73 | 3,19 | 2,06 | 2,61 | 3,20 | 3,86 | 4,54 | | | | | |
| Cooling sensible emission (E) | kW | 0,57 | 0,79 | 0,99 | 1,20 | 1,44 | 1,04 | 1,35 | 1,68 | 2,04 | 2,41 | 1,49 | 1,90 | 2,35 | 2,86 | 3,41 | | | | | |
| Heating (E) | kW | 0,94 | 1,30 | 1,63 | 1,98 | 2,37 | 1,70 | 2,19 | 2,75 | 3,31 | 3,91 | 2,43 | 3,12 | 3,87 | 4,71 | 5,60 | | | | | |
| 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 | 12,2 | 16,1 | 8,2 | 12,4 | 17,8 | 24,8 | 33,0 | | | | | |
| Dp Heating (E) | kPa | 2,6 | 4,6 | 6,5 | 9,1 | 12,6 | 3,0 | 4,8 | 7,2 | 10,0 | 13,5 | 6,5 | 10,2 | 14,9 | 20,4 | 26,9 | | | | | |
| Fan (E) | W | 7,0 | 9,0 | 11,0 | 14,5 | 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 Heating | g (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 | | | | | |
| coil (Water 70/60°C) Dp Hea | t. (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 | | | | | |
| Energy classification FCEER (* | | | C | | | | | Α | | | | | Α | | | | | | | | |
| Energy classification FCCOP (* | | | C | | | | | В | | | | | Α | | | | | | | | |

| MODEL | | | CRC | -ECI | VI 74 | 4 | 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 | m³/h | 380 | 475 | 585 | 735 | 875 | 575 | 755 | 910 | 1145 | 1365 | | |
| Cooling total emission (E) | kW | 2,62 | 3,21 | 3,84 | 4,64 | 5,34 | 3,61 | 4,52 | 5,25 | 6,25 | 7,14 | | |
| Cooling sensible emission (E) | kW | 1,91 | 2,36 | 2,84 | 3,47 | 4,03 | 2,71 | 3,43 | 4,03 | 4,87 | 5,63 | | |
| Heating (E) | kW | 3,09 | 3,82 | 4,61 | 5,61 | 6,51 | 4,50 | 5,73 | 6,70 | 8,12 | 9,39 | | |
| 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 | 16,5 | 20,8 | | |
| Dp Heating (E) | kPa | 6,0 | 8,5 | 11,8 | 16,7 | 21,0 | 5,2 | 7,7 | 9,9 | 13,5 | 17,0 | | |
| 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 Heating (E) | kW | 2,65 | 3,10 | 3,56 | 4,13 | 4,63 | 3,40 | 4,08 | 4,62 | 5,35 | 5,98 | | |
| coil (Water 70/60°C) Dp Heat. (E) | kPa | 2,9 | 3,9 | 4,9 | 6,4 | 7,8 | 4,6 | 6,3 | 7,8 | 10,1 | 12,3 | | |
| Energy classification FCEER (**) (I | E) | | | Α | | | В | | | | | | |
| Energy classification FCCOP (***) (I | E) | A | | | | | | В | | | | | |

- (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.

(**) FCEER = Energy classification in Cooling.

(***) FCCOP = Energy classification in Heating.

Electronic controls included

- MU-MUB models -

CB-T-ECM Continuous fan speed control with electronic thermostat and summer/winter switch

N.B.: if the electrostatic filter is mounted (CRC-ECM only), use the "IAQ" controls.

<u>Wall</u> electronic controls

– MU, MO-MUB and IU-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-MB | Wall control (to be used with UPM-AU or UP-AU only) |
| WM-S-ECM | Continuous fan speed control with electronic thermostat, summer/winter switch and liquid crystal display |
| UPM-AU | Power unit for WM-AU and T-MB remote controls, fitted on the unit |
| UP-AU | Power unit for WM-AU and T-MB remote controls, not fitted on the unit |

Electronic controls for <u>MB boards</u>

| MB-ECM-M | MB electronic board fitted on the unit |
|----------|---|
| MB-ECM-S | MB electronic board supplied with separate packaging |
| T-MB | Wall control (to be used with MB board only) |
| T-MB-M | Control fitted on the unit, for MV/MVB models with left connections (available with right connections, to be used with MB board and UP-AU board only) |
| T-MB-S | Control supplied with separate packaging, for MV/MVB models with left connections (available with right connections, to be used with MB board and UP-AU board only) |
| RM-RT03 | RT03 infra-red remote control with fitted receiver, for MV/MO-MVB models (to be used with MB board only) |
| RS-RT03 | RT03 infra-red remote control with receiver supplied with separate packaging (to be used with MB board only) |
| RT03 | RT03 infra-red remote control supplied with separate packaging (to be used with MB board only) |
| RM | Receiver for RT03 infra-red remote control fitted on the unit, for MV/MO-MVB models (to be used with MB board only) |
| RS | Receiver for RT03 infra-red remote control supplied with separate packaging (to be used with MB board only) |
| PSM-DI | Multifunction control (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 |
| SIOS | Relay output board for Sabianet |

NOTES: for more details about the Controls, see Page 265. for full list of main Accessories, see Page 273.





CB-T-ECM control

Carisma CRC-ECM









Carisma CRT Fan Coil Unit with Tangential Fan with Asynchronous Motor

Range includes **6 air flow rates** (from 90 to 945 m³/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.

Among fan coils with asynchronous motors, the CRT series is the one that offers the best compromise between electrical consumption, performance and cost. At minimum speed (Eurovent estimates that this is 65% of its operating time), electrical absorption ranges between 6 and 19W according to size and the sound pressure levels are between 19 and 23 dB(A). Therefore, it is the ideal solution for aesthetic systems, in areas with low background noise.

Technical characteristics of the main components:

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 galvanized steel insulated with polyolefin (PO) foam (class M1).

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.

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.

Coll: 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:

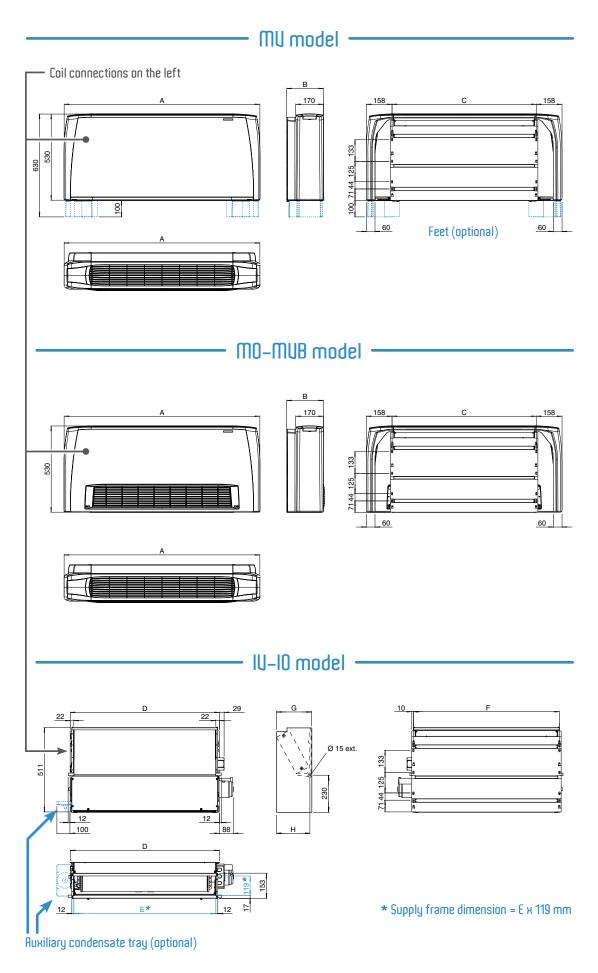
this must be specified on the order as this operation can not be carried out on site during installation.

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 polyolefin (PO) foam (class M1).

The outside diameter of the condensate discharge pipe is 15 mm.



Dimensions, Weight, Water content





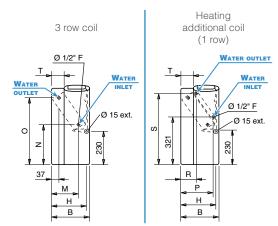
Carisma CRT

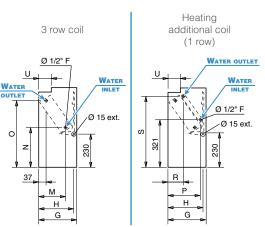
Dimensions, Weight, Water content

- Coil connections

MU and MO-MUB model







Dimension (mm) ·

| MODEL | 1 | 2 | 3 | 5 | 6 | 7 |
|-------|-----|-----|-----|------|------|------|
| A | 670 | 770 | 985 | 1200 | 1200 | 1415 |
| В | 225 | 225 | 225 | 225 | 225 | 225 |
| С | 354 | 454 | 669 | 884 | 884 | 1099 |
| D | 374 | 474 | 689 | 904 | 904 | 1119 |
| E | 330 | 430 | 645 | 860 | 860 | 1075 |
| F | 354 | 454 | 669 | 884 | 884 | 1099 |
| G | 218 | 218 | 218 | 218 | 218 | 218 |
| Н | 205 | 205 | 205 | 205 | 205 | 205 |
| M | 145 | 145 | 145 | 145 | 145 | 145 |
| N | 260 | 260 | 260 | 260 | 260 | 260 |
| 0 | 460 | 460 | 460 | 460 | 460 | 460 |
| Р | 185 | 185 | 185 | 185 | 185 | 185 |
| R | 105 | 105 | 105 | 105 | 105 | 105 |
| S | 475 | 475 | 475 | 475 | 475 | 475 |
| Т | 55 | 55 | 55 | 55 | 55 | 55 |
| U | 65 | 65 | 65 | 65 | 65 | 65 |

- Weight (kg) ·

| | | | | WEI | GHT WITH | H PACKA | GING | | WEIGHT WITHOUT PACKAGING | | | | | | | | | |
|----------|------|------|------|------|----------|---------|------|------|--------------------------|------|------|------|------|------|--|--|--|--|
| | M | ODEL | 1 | 2 | 3 | 5 | 6 | 7 | 1 | 2 | 3 | 5 | 6 | 7 | | | | |
| -mub | ROWS | 3 | 14,8 | 16,2 | 19,6 | 24,2 | 24,9 | 28,7 | 13,2 | 14,4 | 17,3 | 21,4 | 22,1 | 25,4 | | | | |
| | RO | 3+1 | 15,5 | 17,0 | 20,8 | 25,7 | 26,4 | 30,5 | 13,9 | 15,2 | 18,5 | 22,9 | 23,6 | 27,2 | | | | |
| <u> </u> | ROWS | 3 | 11,5 | 12,6 | 15,3 | 19,2 | 20,0 | 23,6 | 9,9 | 10,8 | 13,5 | 16,9 | 17,7 | 20,8 | | | | |
| 01-U1 | RO | 3+1 | 12,2 | 13,4 | 16,5 | 20,7 | 21,5 | 25,4 | 10,6 | 11,6 | 14,7 | 18,4 | 19,2 | 22,6 | | | | |

- Water content (litres) -

| M | ODEL | 1 | 2 | 3 | 5 | 6 | 7 |
|-----|------|-----|-----|-----|-----|-----|-----|
| NS | 3 | 0,5 | 0,6 | 0,9 | 1,3 | 1,6 | 1,7 |
| ROV | 3+1 | 0,2 | 0,2 | 0,3 | 0,4 | 0,5 | 0,5 |





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.

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

| MODEL | | CRT 13 | | | | | CRT 23 | | | | | CRT 33 | | | | | | | |
|-------------------------------|-------|--------|--------------|--------------|------|--------------|--------|------|--------------|--------------|------|--------------|------|------|--------------|--------------|------|--------------|------|
| Croad | | 1 | 2 (E) | 3 (E) | 4 | 5 (E) | 6 | 1 | 2 (E) | 3 (E) | 4 | 5 (E) | 6 | 1 | 2 (E) | 3 (E) | 4 | 5 (E) | 6 |
| Speed | | | MIN | MED | | MAX | | | MIN | MED | | MAX | | | MIN | MED | | MAX | |
| Air flow | m³/h | 95 | 115 | 140 | 175 | 200 | 240 | 125 | 150 | 180 | 225 | 250 | 305 | 170 | 205 | 275 | 315 | 370 | 440 |
| Cooling total emission (E) | kW | 0,51 | 0,59 | 0,69 | 0,79 | 0,87 | 0,99 | 0,73 | 0,85 | 0,96 | 1,14 | 1,24 | 1,41 | 1,09 | 1,29 | 1,63 | 1,83 | 2,04 | 2,36 |
| Cooling sensible emission (E) | kW | 0,40 | 0,48 | 0,56 | 0,66 | 0,74 | 0,86 | 0,56 | 0,66 | 0,75 | 0,91 | 0,99 | 1,15 | 0,81 | 0,96 | 1,23 | 1,39 | 1,56 | 1,83 |
| Heating (E) | kW | 0,68 | 0,80 | 0,94 | 1,11 | 1,24 | 1,44 | 0,94 | 1,11 | 1,27 | 1,53 | 1,66 | 1,93 | 1,32 | 1,57 | 2,02 | 2,27 | 2,55 | 2,99 |
| Heating - Water 70-60°C | kW | 1,17 | 1,39 | 1,64 | 1,94 | 2,17 | 2,52 | 1,59 | 1,88 | 2,16 | 2,61 | 2,86 | 3,33 | 2,21 | 2,64 | 3,41 | 3,83 | 4,31 | 5,07 |
| Dp Cooling (E) | kPa | 0,7 | 0,9 | 1,2 | 1,5 | 1,8 | 2,2 | 1,6 | 2,1 | 2,6 | 3,6 | 4,1 | 5,2 | 5,0 | 6,7 | 10,1 | 12,3 | 15,2 | 20,0 |
| Dp Heating (E) | kPa | 0,5 | 0,7 | 0,9 | 1,2 | 1,5 | 1,9 | 1,3 | 1,8 | 2,2 | 3,0 | 3,3 | 4,3 | 4,1 | 5,3 | 8,3 | 10,2 | 12,5 | 15,6 |
| Fan (E) | W | 6 | 8 | 11 | 14 | 17 | 23 | 7 | 9 | 12 | 16 | 19 | 25 | 8 | 10 | 15 | 18 | 23 | 31 |
| Sound power (E) | dB(A) | 27 | 31 | 36 | 41 | 44 | 47 | 26 | 31 | 35 | 40 | 43 | 47 | 28 | 31 | 36 | 40 | 44 | 48 |
| Sound pressure (*) | dB(A) | 18 | 22 | 27 | 32 | 35 | 38 | 17 | 22 | 26 | 31 | 34 | 38 | 19 | 22 | 27 | 31 | 35 | 39 |

| MODEL | | CRT 53 | | | | | | | CRT 63 | | | | | CRT 73 | | | | | |
|-------------------------------|-------|--------|--------------|--------------|------|--------------|------|------|--------------|--------------|------|--------------|------|--------|--------------|--------------|------|--------------|-------|
| Spood | | 1 | 2 (E) | 3 (E) | 4 | 5 (E) | 6 | 1 | 2 (E) | 3 (E) | 4 | 5 (E) | 6 | 1 | 2 (E) | 3 (E) | 4 | 5 (E) | 6 |
| Speed | | | MIN | MED | | MAX | | | MIN | MED | | MAX | | | MIN | MED | | MAX | |
| Air flow | m³/h | 225 | 285 | 360 | 440 | 495 | 610 | 305 | 370 | 475 | 560 | 635 | 780 | 360 | 445 | 570 | 680 | 780 | 945 |
| Cooling total emission (E) | kW | 1,46 | 1,77 | 2,17 | 2,53 | 2,76 | 3,23 | 1,88 | 2,19 | 2,67 | 3,02 | 3,33 | 3,87 | 2,29 | 2,72 | 3,32 | 3,77 | 4,18 | 4,82 |
| Cooling sensible emission (E) | kW | 1,08 | 1,32 | 1,64 | 1,93 | 2,12 | 2,52 | 1,41 | 1,66 | 2,05 | 2,34 | 2,61 | 3,07 | 1,70 | 2,04 | 2,52 | 2,89 | 3,23 | 3,78 |
| Heating (E) | kW | 1,77 | 2,17 | 2,69 | 3,16 | 3,47 | 4,13 | 2,31 | 2,73 | 3,34 | 3,83 | 4,26 | 5,03 | 2,78 | 3,33 | 4,10 | 4,71 | 5,27 | 6,16 |
| Heating - Water 70-60°C | kW | 2,97 | 3,65 | 4,54 | 5,34 | 5,87 | 6,98 | 3,89 | 4,59 | 5,66 | 6,49 | 7,23 | 8,55 | 4,66 | 5,62 | 6,91 | 7,96 | 8,91 | 10,44 |
| Dp Cooling (E) | kPa | 3,3 | 4,6 | 6,5 | 8,5 | 9,9 | 13,1 | 5,1 | 6,6 | 9,4 | 11,6 | 13,8 | 18,0 | 8,5 | 11,5 | 16,6 | 20,9 | 25,1 | 31,7 |
| Dp Heating (E) | kPa | 2,7 | 3,7 | 5,4 | 7,0 | 8,1 | 11,0 | 4,1 | 5,5 | 7,6 | 9,7 | 11,4 | 15,2 | 7,0 | 9,1 | 13,1 | 16,2 | 19,8 | 25,2 |
| Fan (E) | W | 12 | 15 | 22 | 27 | 33 | 46 | 15 | 20 | 28 | 35 | 44 | 60 | 19 | 24 | 34 | 43 | 53 | 72 |
| Sound power (E) | dB(A) | 26 | 31 | 37 | 41 | 43 | 48 | 31 | 36 | 43 | 47 | 50 | 54 | 32 | 36 | 43 | 47 | 50 | 55 |
| Sound pressure (*) | dB(A) | 17 | 22 | 28 | 32 | 34 | 39 | 22 | 27 | 34 | 38 | 41 | 45 | 23 | 27 | 34 | 38 | 41 | 46 |

(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 m³ room and a reverberation time of 0.5 sec.







Units with 1 row additional coil

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

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: +70°C E.W.T. +60°C L.W.T.

| MODEL | | CRT 13+1 | | | | | | | CRT 23+1 | | | | | | CRT 33+1 | | | | | |
|-------------------------------|-------|----------|--------------|--------------|------|--------------|------|------|--------------|--------------|------|--------------|------|------|--------------|--------------|------|--------------|------|--|
| Speed | | 1 | 2 (E) | 3 (E) | 4 | 5 (E) | 6 | 1 | 2 (E) | 3 (E) | 4 | 5 (E) | 6 | 1 | 2 (E) | 3 (E) | 4 | 5 (E) | 6 | |
| Speeu | | | MIN | MED | | MAX | | | MIN | MED | | MAX | | | MIN | MED | | MAX | | |
| Air flow | m³/h | 90 | 110 | 135 | 165 | 190 | 225 | 115 | 140 | 170 | 210 | 240 | 290 | 165 | 200 | 255 | 300 | 345 | 415 | |
| Cooling total emission (E) | kW | 0,49 | 0,57 | 0,67 | 0,76 | 0,84 | 0,95 | 0,68 | 0,80 | 0,92 | 1,08 | 1,20 | 1,36 | 1,05 | 1,25 | 1,54 | 1,73 | 1,94 | 2,22 | |
| Cooling sensible emission (E) | kW | 0,38 | 0,46 | 0,55 | 0,63 | 0,71 | 0,81 | 0,52 | 0,62 | 0,71 | 0,86 | 0,96 | 1,11 | 0,78 | 0,93 | 1,16 | 1,32 | 1,49 | 1,73 | |
| Heating (E) | kW | 0,60 | 0,69 | 0,80 | 0,91 | 1,01 | 1,13 | 0,82 | 0,95 | 1,07 | 1,25 | 1,38 | 1,56 | 1,25 | 1,45 | 1,74 | 1,93 | 2,14 | 2,43 | |
| Dp Cooling (E) | kPa | 0,6 | 0,8 | 1,1 | 1,4 | 1,6 | 2,0 | 1,4 | 1,9 | 2,4 | 3,3 | 3,9 | 4,9 | 4,5 | 6,1 | 8,8 | 10,8 | 13,2 | 16,8 | |
| Dp Heating (E) | kPa | 0,6 | 0,8 | 1,0 | 1,3 | 1,5 | 1,9 | 1,3 | 1,6 | 2,0 | 2,6 | 3,1 | 3,9 | 3,4 | 4,4 | 6,1 | 7,3 | 8,8 | 11,0 | |
| Fan (E) | W | 6 | 8 | 11 | 14 | 17 | 23 | 7 | 9 | 12 | 16 | 19 | 25 | 8 | 10 | 15 | 18 | 23 | 31 | |
| Sound power (E) | dB(A) | 27 | 31 | 36 | 41 | 44 | 47 | 26 | 31 | 35 | 40 | 43 | 47 | 28 | 31 | 36 | 40 | 44 | 48 | |
| Sound pressure (*) | dB(A) | 18 | 22 | 27 | 32 | 35 | 38 | 17 | 22 | 26 | 31 | 34 | 38 | 19 | 22 | 27 | 31 | 35 | 39 | |

| MODEL | | CRT 53+1 | | | | | | CRT 63+1 | | | | | | | CRT 73+1 | | | | | |
|--------------------------------------|-------|----------|--------------|--------------|------|--------------|------|----------|--------------|--------------|------|--------------|------|------|--------------|--------------|------|--------------|------|--|
| Speed | | 1 | 2 (E) | 3 (E) | 4 | 5 (E) | 6 | 1 | 2 (E) | 3 (E) | 4 | 5 (E) | 6 | 1 | 2 (E) | 3 (E) | 4 | 5 (E) | 6 | |
| Speed | | | MIN | MED | | MAX | | | MIN | MED | | MAX | | | MIN | MED | | MAX | | |
| Air flow | m³/h | 215 | 275 | 345 | 420 | 475 | 580 | 285 | 345 | 440 | 520 | 600 | 735 | 345 | 420 | 540 | 640 | 735 | 895 | |
| Cooling total emission (E) | kW | 1,41 | 1,72 | 2,09 | 2,44 | 2,67 | 3,11 | 1,77 | 2,09 | 2,53 | 2,87 | 3,19 | 3,70 | 2,21 | 2,59 | 3,17 | 3,62 | 4,04 | 4,63 | |
| Cooling sensible emission (E) | kW | 1,04 | 1,28 | 1,57 | 1,85 | 2,05 | 2,41 | 1,32 | 1,57 | 1,93 | 2,21 | 2,48 | 2,93 | 1,64 | 1,93 | 2,40 | 2,76 | 3,11 | 3,61 | |
| Heating (E) | kW | 1,64 | 1,95 | 2,31 | 2,65 | 2,87 | 3,30 | 2,00 | 2,31 | 2,74 | 3,07 | 3,39 | 3,90 | 2,52 | 2,89 | 3,46 | 3,90 | 4,31 | 4,91 | |
| Dp Cooling (E) | kPa | 3,0 | 4,3 | 6,1 | 8,0 | 9,4 | 12,2 | 4,6 | 6,1 | 8,5 | 10,6 | 12,8 | 16,6 | 10,3 | 13,0 | 18,7 | 24,0 | 28,6 | 35,5 | |
| Dp Heating (E) | kPa | 1,1 | 1,5 | 2,0 | 2,5 | 2,9 | 3,7 | 1,5 | 2,0 | 2,7 | 3,2 | 3,9 | 4,9 | 2,7 | 3,4 | 4,7 | 5,8 | 6,9 | 8,7 | |
| Fan (E) | W | 12 | 15 | 21 | 27 | 33 | 46 | 15 | 20 | 28 | 35 | 44 | 60 | 19 | 24 | 34 | 43 | 53 | 72 | |
| Sound power (E) | dB(A) | 26 | 31 | 37 | 41 | 43 | 48 | 31 | 36 | 43 | 47 | 50 | 54 | 32 | 36 | 43 | 47 | 50 | 55 | |
| Sound pressure (*) | dB(A) | 17 | 22 | 28 | 32 | 34 | 39 | 22 | 27 | 34 | 38 | 41 | 45 | 23 | 27 | 34 | 38 | 41 | 46 | |

(*) = 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 controls <u>included</u>

— Standard MU-MUB 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 electric heater is mounted, use the "IAQ" controls.

<u>Wall</u> electronic controls

— Standard MU, MO-MUB and IU-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-MB | Wall control (to be used with UPM-AU or UP-AU only) |
| TM0-503-SV2 | Automatic speed control with electronic thermostat to be mounted in the DIN 503 box |
| T2T | Electromechanical thermostat with summer/winter switch (only for 2 pipe units) |
| UPM-AU | Power unit for WM-AU and T-MB remote controls, fitted on the unit |
| UP-AU | Power unit for WM-AU and T-MB remote controls, not fitted on the unit |

FreeSabiana wireless control system

| Free-Com | Remote control to be used with electronic boards described at page 267 |
|----------------|--|
| Free-Upm | Power unit fitted on the unit |
| Free-Ups | Power unit not fitted on the unit |
| Free-Sen | Temperature probe |
| CB-Free | ON/OFF control to be mounted on MV units |



Electronic controls for <u>MB boards</u>

| MB-M | MB electronic board fitted on the unit |
|---------|---|
| MB-S | MB electronic board supplied with separate packaging |
| T-MB | Wall control (to be used with MB board only) |
| T-MB-M | Control fitted on the unit, for MV/MVB models with left connections (available with right connections, to be used with MB board and UP-AU board only) |
| T-MB-S | Control supplied with separate packaging, for MV/MVB models with left connections (available with right connections, to be used with MB board and UP-AU board only) |
| RM-RT03 | RT03 infra-red remote control with fitted receiver, for MV/MO-MVB models (to be used with MB board only) |
| RS-RT03 | RT03 infra-red remote control with receiver supplied with separate packaging (to be used with MB board only) |
| RT03 | RT03 infra-red remote control supplied with separate packaging (to be used with MB board only) |
| RM | Ricevitore per telecomando RT03 montato in fabbrica, solo versioni MV / MO-MVB (utilizzabile solo con scheda MB) |
| RS | Receiver for RT03 infra-red remote control fitted on the unit, for MV/MO-MVB models (to be used with MB board only) |
| PSM-DI | Multifunction control (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 |
| SIOS | Relay output board for Sabianet |

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 m³/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.

The extreme efficiency, also at low speed, makes possible a great reduction in electric consumption (50% less in comparison to CRT AC motor) with absorption values under normal operating conditions that **do not exceed 8 Watt**. The excellent values of the 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 strict Standards in force is certified by an independent institutee.

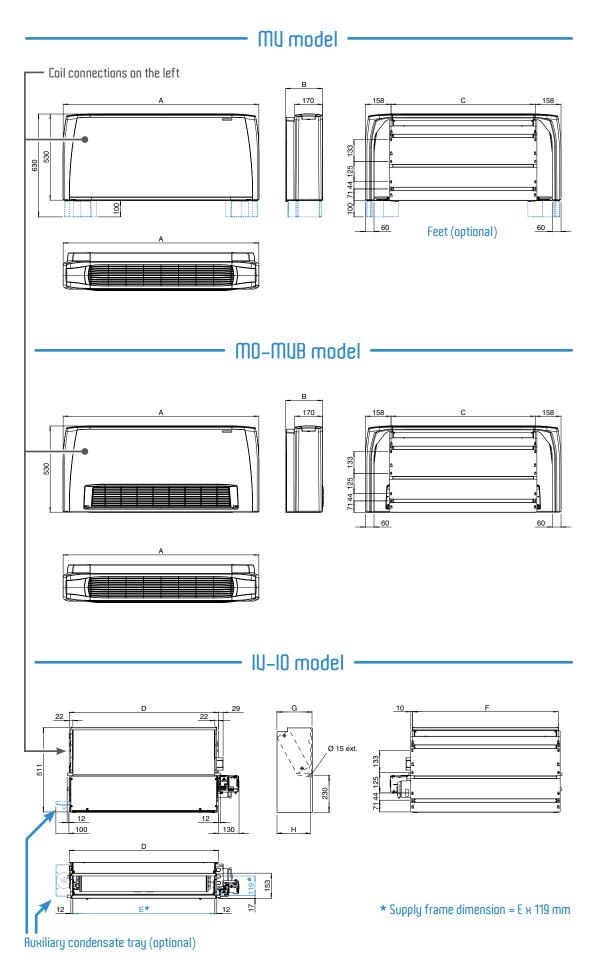


Technical characteristics of the main components:

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** – **240** U and frequency of **50** – **60** Hz.

Dimensions, Weight, Water content





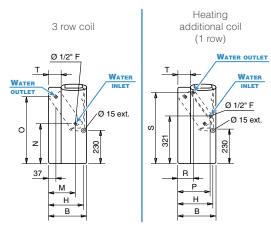
Carisma CRT-ECM

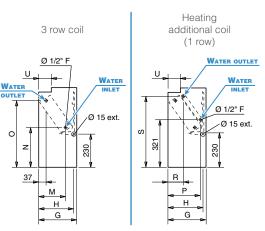
Dimensions, Weight, Water content

- Coil connections

MU and MO-MUB model







Dimension (mm)

| MODEL | 1 | 2 | 3 | 5 | 7 |
|-------|-----|-----|-----|------|------|
| A | 670 | 770 | 985 | 1200 | 1415 |
| В | 225 | 225 | 225 | 225 | 225 |
| С | 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 |
| Н | 205 | 205 | 205 | 205 | 205 |
| М | 145 | 145 | 145 | 145 | 145 |
| N | 260 | 260 | 260 | 260 | 260 |
| 0 | 460 | 460 | 460 | 460 | 460 |
| Р | 185 | 185 | 185 | 185 | 185 |
| R | 105 | 105 | 105 | 105 | 105 |
| S | 475 | 475 | 475 | 475 | 475 |
| Т | 55 | 55 | 55 | 55 | 55 |
| U | 65 | 65 | 65 | 65 | 65 |

- Weight (kg) ·

| | | | | WEIGHT | WITH PAC | KAGING | | WEIGHT WITHOUT PACKAGING | | | | | | | | |
|-------|------|------|------|--------|----------|--------|------|--------------------------|------|------|------|------|--|--|--|--|
| | M | ODEL | 1 | 2 | 3 | 5 | 7 | 1 | 2 | 3 | 5 | 7 | | | | |
| BUM- | ROWS | 3 | 14,8 | 16,2 | 19,6 | 24,2 | 28,7 | 13,2 | 14,4 | 17,3 | 21,4 | 25,4 | | | | |
| | ROV | 3+1 | 15,5 | 17,0 | 20,8 | 25,7 | 30,5 | 13,9 | 15,2 | 18,5 | 22,9 | 27,2 | | | | |
| 0- | ROWS | 3 | 11,5 | 12,6 | 15,3 | 19,2 | 23,6 | 9,9 | 10,8 | 13,5 | 16,9 | 20,8 | | | | |
| 01-U1 | RO | 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) -

| Μ | ODEL | 1 | 2 | 3 | 5 | 7 |
|------|------|-----|-----|-----|-----|-----|
| NS | 3 | 0,5 | 0,6 | 0,9 | 1,3 | 1,7 |
| ROWS | 3+1 | 0,2 | 0,2 | 0,3 | 0,4 | 0,5 |





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:** +50°C Water flow rate as for the cooling conditions

| MODEL | | | CRT-ECM 13 | | | CRT-ECM 23 | | | CRT-ECM 33 | | | Т-Е 53 | CM | 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 | m³/h | 105 | 165 | 240 | 150 | 215 | 305 | 220 | 325 | 450 | 295 | 460 | 675 | 400 | 630 | 900 |
| Cooling total emission (E) | kW | 0,55 | 0,76 | 0,99 | 0,85 | 1,11 | 1,41 | 1,37 | 1,88 | 2,38 | 1,83 | 2,62 | 3,49 | 2,48 | 3,57 | 4,67 |
| Cooling sensible emission (E) | kW | 0,44 | 0,63 | 0,86 | 0,66 | 0,88 | 1,15 | 1,02 | 1,43 | 1,85 | 1,37 | 2,01 | 2,74 | 1,85 | 2,73 | 3,65 |
| Heating (E) | kW | 0,80 | 1,10 | 1,48 | 1,17 | 1,52 | 1,96 | 1,79 | 2,45 | 3,12 | 2,39 | 3,45 | 4,63 | 3,14 | 4,57 | 6,06 |
| 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 | 0,7 | 1,1 | 1,8 | 1,7 | 2,7 | 4,2 | 6,2 | 10,4 | 16,0 | 3,9 | 7,4 | 12,1 | 7,7 | 15,0 | 24,0 |
| Fan (E) | W | 4,0 | 6,0 | 10,0 | 4,5 | 6,5 | 11,5 | 5,0 | 8,5 | 16,0 | 6,0 | 11,5 | 26,0 | 7,0 | 15,0 | 38,0 |
| Sound power (E) | dB(A) | 29 | 39 | 48 | 33 | 43 | 49 | 33 | 42 | 49 | 35 | 46 | 53 | 37 | 48 | 56 |
| Sound pressure (*) | dB(A) | 20 | 30 | 39 | 24 | 34 | 40 | 24 | 33 | 40 | 26 | 37 | 44 | 28 | 39 | 47 |
| Energy classification FCEER (**) | (E) | | В | | | В | | | Α | | | Α | | | Α | |
| Energy classification FCCOP (*** | nergy classification FCCOP (***) (E) | | В | | | В | | | А | | | А | | | А | |

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.

<u>HEATING</u> (winter mode) Entering air temperature: +20°C Water temperature: +70°C E.W.T. +60°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 |
| Air flow | m³/h | 95 | 150 | 225 | 135 | 195 | 285 | 200 | 295 | 415 | 270 | 420 | 640 | 355 | 565 | 820 |
| Cooling total emission (E) | kW | 0,51 | 0,72 | 0,95 | 0,78 | 1,02 | 1,34 | 1,25 | 1,71 | 2,22 | 1,69 | 2,44 | 3,35 | 2,26 | 3,29 | 4,35 |
| Cooling sensible emission (E) | kW | 0,40 | 0,60 | 0,81 | 0,60 | 0,81 | 1,09 | 0,93 | 1,30 | 1,73 | 1,26 | 1,85 | 2,62 | 1,68 | 2,50 | 3,37 |
| Heating (E) | kW | 0,62 | 0,85 | 1,09 | 0,98 | 1,23 | 1,57 | 1,54 | 2,00 | 2,51 | 2,05 | 2,76 | 3,67 | 2,67 | 3,68 | 4,72 |
| 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 | 0,7 | 1,1 | 1,8 | 1,7 | 2,5 | 3,9 | 4,9 | 7,8 | 11,6 | 1,6 | 2,7 | 4,4 | 3,0 | 5,2 | 8,1 |
| Fan (E) | W | 4,0 | 6,0 | 10,0 | 4,5 | 6,5 | 11,5 | 5,0 | 8,5 | 16,0 | 6,0 | 11,5 | 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 |
| Energy classification FCEER (**) (E) | | | В | | | В | | | Α | | | Α | | | А | |
| Energy classification FCCOP (*** |) (E) | | C | | | В | | | Α | | | Α | | | В | |

(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.

(**) FCEER = Energy classification in Cooling.

(*******) **FCCOP** = Energy classification in Heating.



Electronic controls <u>included</u>

- MU-MUB models -

CB-T-ECM Continuous fan speed control with electronic thermostat and summer/winter switch

<u>Wall</u> electronic controls

— MU, MO-MUB and IU-10 models –

| WM-AU | Automatic speed control with electronic thermostat and summer/winter switch (to be used with UPM-AU or UP-AU only) |
|----------|--|
| T-MB | Wall control (to be used with UPM-AU or UP-AU only) |
| WM-S-ECM | Continuous fan speed control with electronic thermostat, summer/winter switch and liquid crystal display |
| UPM-AU | Power unit for WM-AU and T-MB remote controls, fitted on the unit |
| UP-AU | Power unit for WM-AU and T-MB remote controls, not fitted on the unit |

Electronic controls for <u>MB boards</u>

| MB-ECM-M | MB electronic board fitted on the unit |
|----------|---|
| MB-ECM-S | MB electronic board supplied with separate packaging |
| T-MB | Wall control (to be used with MB board only) |
| T-MB-M | Control fitted on the unit, for MV/MVB models with left connections (available with right connections, to be used with MB board and UP-AU board only) |
| T-MB-S | Control supplied with separate packaging, for MV/MVB models with left connections (available with right connections, to be used with MB board and UP-AU board only) |
| RM-RT03 | RT03 infra-red remote control with fitted receiver, for MV/MO-MVB models (to be used with MB board only) |
| RS-RT03 | RT03 infra-red remote control with receiver supplied with separate packaging (to be used with MB board only) |
| RT03 | RT03 infra-red remote control supplied with separate packaging (to be used with MB board only) |
| RM | Receiver for RT03 infra-red remote control fitted on the unit, for MV/MO-MVB models (to be used with MB board only) |
| RS | Receiver for RT03 infra-red remote control supplied with separate packaging (to be used with MB board only) |
| PSM-DI | Multifunction control (to be used with MB board only) |

\cdot 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 | | | | | | |
| SIOS | Relay output board for Sabianet | | | | | | |

Carisma CRR Fan Coil Unit with Tangential Fan with Asynchronous Motor

Range includes **Y air flow rates** (from 110 to 500 m³/h) and **1 model**, vertical for wall installation, equipped with 2 row coil.

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

Technical characteristics of the main components:

Duter casing: made with strong synthetic lateral corners and from galvanized and pre-painted 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 galvanized steel insulated with polyolefin (PO) foam (class M1).



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.

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.



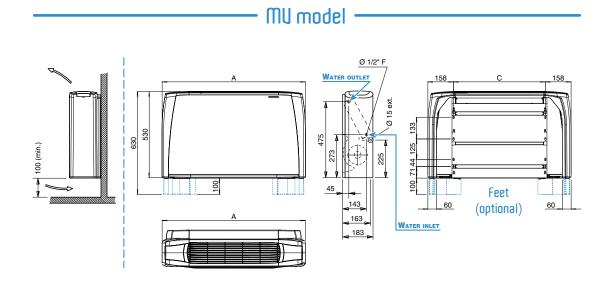
Coil: it is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process. The coil has two 1/2inch BSP internal connections and 1/8 inch BSP air vent and drain. The coil is not suitable for use in corrosive atmosphere or in environments where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

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.

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

Dimensions, Weight, Water content



| Dimension (mm) | | | | | | | | |
|----------------|-----|-----|-----|------|--|--|--|--|
| MODEL 1 2 3 4 | | | | | | | | |
| А | 670 | 770 | 985 | 1200 | | | | |
| С | 354 | 454 | 669 | 884 | | | | |

| | Weight (kg) | | | | | | | | | | |
|-------|-------------|-------------|-------------|------|------|--------------|--------------|------|--|--|--|
| | | WEIGHT WITH | H PACKAGING | | l | NEIGHT WITHO | UT PACKAGINO | 2 | | | |
| MODEL | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | | | |
| | 13,8 | 14,7 | 17,6 | 22,2 | 12,6 | 13,2 | 15,6 | 19,7 | | | |

| Water content (litres) | | | | | | | | |
|------------------------|-----|-----|-----|-----|--|--|--|--|
| MODEL | 1 | 2 | 3 | 4 | | | | |
| | 0,4 | 0,5 | 0,8 | 1,1 | | | | |







www.certiflash.com

Units with 2 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:** +50°C Water flow rate as for the cooling conditions

| MODEL | | CRR 1 | | CRR 2 | | CRR 3 | | | CRR 4 | | | | |
|-------------------------------|-------|-------|--------------|--------------|-------|--------------|--------------|-------|--------------|--------------|-------|--------------|--------------|
| Croad | | 1 (E) | 2 (E) | 3 (E) | 1 (E) | 2 (E) | 3 (E) | 1 (E) | 2 (E) | 3 (E) | 1 (E) | 2 (E) | 3 (E) |
| Speed | | MIN | MED | MAX |
| Air flow | m³/h | 110 | 150 | 180 | 160 | 200 | 250 | 230 | 290 | 360 | 320 | 400 | 500 |
| Cooling total emission (E) | kW | 0,60 | 0,74 | 0,83 | 0,95 | 1,10 | 1,30 | 1,31 | 1,59 | 1,87 | 2,00 | 2,40 | 2,80 |
| Cooling sensible emission (E) | kW | 0,47 | 0,56 | 0,65 | 0,71 | 0,86 | 1,01 | 1,08 | 1,31 | 1,53 | 1,40 | 1,71 | 2,05 |
| Heating (E) | kW | 0,80 | 1,00 | 1,20 | 1,13 | 1,32 | 1,60 | 1,80 | 2,20 | 2,60 | 2,50 | 3,00 | 3,60 |
| Heating - Water 70-60°C | kW | 1,40 | 1,78 | 2,03 | 1,91 | 2,25 | 2,69 | 3,02 | 3,80 | 4,57 | 4,22 | 5,08 | 6,12 |
| Dp Cooling (E) | kPa | 6,0 | 9,0 | 11,0 | 11,5 | 15,5 | 20,0 | 4,4 | 6,3 | 7,8 | 11,0 | 14,5 | 20,0 |
| Dp Heating (E) | kPa | 4,0 | 5,5 | 7,0 | 9,5 | 12,5 | 16,5 | 4,0 | 5,0 | 7,0 | 10,5 | 14,1 | 18,8 |
| Fan (E) | W | 20 | 22 | 28 | 20 | 22 | 27 | 22 | 26 | 31 | 25 | 30 | 36 |
| Sound power (E) | dB(A) | 34 | 40 | 42 | 34 | 39 | 45 | 34 | 39 | 45 | 34 | 40 | 46 |
| Sound pressure (*) | dB(A) | 25 | 31 | 33 | 25 | 30 | 36 | 25 | 30 | 36 | 25 | 31 | 37 |

(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 m³ room and a reverberation time of 0.5 sec.

Electronic controls <u>included</u>

| 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 summer/winter switch |

<u>Wall</u> electronic controls

FreeSabiana wireless control system

| | • |
|----------|--|
| Free-Com | Remote control to be used with electronic boards described at Page 267 |
| | |

NOTES: for more details about the Controls, see Page 263. for full list of main Accessories, see Page 273.



Carisma CFR Fan Coil Unit with Tangential Fan with Asynchronous Motor

Carisma CFR fan coils are designed to meet the frequent requirement in homes of combining the typical qualities of radiators, such as reduced depth and quiet operation, with the typical quality of fan coils for controlling the climate in environments all year round with a high comfort air outlet temperature.

They are available into **two main uersions:** with front radial panel or with front panel for covering only. In winter, the first solution provides both a convective and radiant thermal exchange, **further improving the feeling of well being**.

On demand, recessed versions, horizontal ceiling mounted versions and 4 pipe systems are available for installation in non residential buildings.

Carisma CFR

Technical characteristics of the main components:

Carisma CFR fan coils are available in two models:

- with coil for MU and IU-I0 models;
- with coil coupled to a radiant element for MUR models.

MV and IV-IO models, aided by the water coil only, meet all the typical requirements of a fan coil with especially reduced size.

MVR model, in addition to the water coil, includes an integrated radiant element which enhances the efficiency of the unit, providing in winter both a convective and radiant static thermal exchange.

Frontal panel and remouable lateral corners (to inspect the compartment, electric or hydraulic connections) in galvanised steel painted with oven-dried epoxy powders RAL 9010.

<u>Casing</u> in high resistance galvanised steel.

<u>Coil:</u>

 Coil in copper pipes and aluminium fins with high efficiency turbulence. Eurokonus 3/4" threaded fittings, comply with the new requirements of EU standards; the headers are equipped with air vent and water drains. The coil is equipped with a sensor to detect water temperature. The standard position

of the hydraulic connections is on the left side looking at the unit from the front. However the coils are reversible: the side of the connections can therefore be inverted

on site. Right side connections are possible on demand.

The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.

 Radiant element (MVR models only) connected in parallel to the coil and equipped with a thermostatic valve which opens when the water reaches a temperature of 29°C.

Fan assembly including tangential fan in synthetic material with offset fins (extremely silent) mounted on EPDM anti-vibration supports. Statically and dynamically balanced rotor, coupled directly on the motor shaft.

Single-phase resin pack **<u>electric motor</u>** mounted on EPDM anti-vibration supports with sensor for HALL effect.

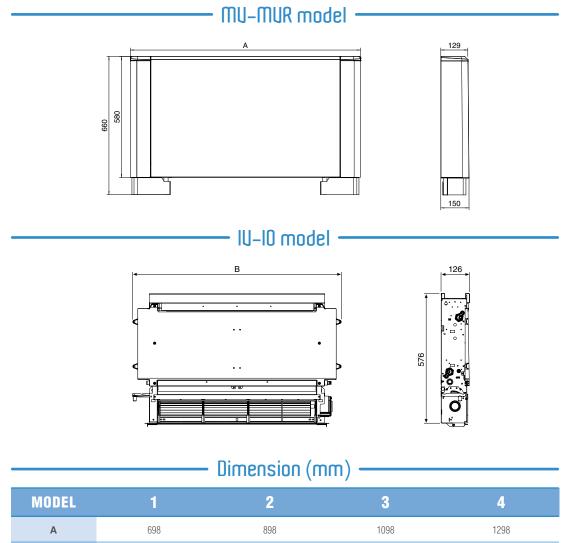
Reversible **Supply air grid** in galvanised steel painted with oven-dried epoxy powders RAL 9010. Large size with high mechanical resistance.

Condensate collection tray in shockproof PVC, easily removable for periodical cleaning. Condensate collection tray in shockproof ABS for horizontal installation (optional).





Dimensions, Weight, Water content



| | ight | |
|------------|------|------|
| W E | | (KE) |
| | 0 | |

925

1125

725

| | | WEIGHT WITH | H PACKAGING | | WEIGHT WITHOUT PACKAGING | | | | | |
|-------|------|-------------|-------------|------|--------------------------|------|------|------|--|--|
| MODEL | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | | |
| MV | 15,0 | 17,0 | 20,0 | 23,0 | 12,5 | 14,0 | 16,5 | 19,5 | | |
| MVR | 17,0 | 19,5 | 24,0 | 27,5 | 14,5 | 16,5 | 20,5 | 23,5 | | |
| IV-IO | 11,5 | 15,0 | 18,5 | 22,0 | 9,0 | 12,0 | 15,0 | 18,0 | | |

— Water content (litres) —

| | | | | × | | | | |
|-------|------|-----|------|------|-----------------|-----|-----|-----|
| | | С | OIL | | RADIANT ELEMENT | | | |
| MODEL | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| MV | 0,47 | 0,8 | 1,13 | 1,46 | - | _ | - | - |
| MVR | 0,47 | 0,8 | 1,13 | 1,46 | 0,3 | 0,5 | 0,7 | 0,9 |
| IV-IO | 0,47 | 0,8 | 1,13 | 1,46 | - | _ | _ | - |



в

525





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. |

<u>HEATING</u> (winter mode) Entering air temperature: +20°C Entering water temperature: +50°C

Water flow rate as for the cooling conditions

| MODEL | | CFR 1 | | | CFR 2 | | | | CFR 3 | } | CFR 4 | | | |
|-------------------------------|-------|-------|------|------|-------|------|------|------|-------|------|-------|------|------|--|
| Speed | | MIN | MED | MAX | MIN | MED | MAX | MIN | MED | MAX | MIN | MED | MAX | |
| Air flow | m³/h | 100 | 125 | 160 | 170 | 230 | 320 | 180 | 270 | 460 | 370 | 450 | 575 | |
| Cooling total emission (E) | kW | 0,38 | 0,72 | 0,83 | 0,92 | 1,36 | 1,76 | 1,51 | 2,11 | 2,56 | 1,99 | 2,70 | 3,31 | |
| Cooling sensible emission (E) | kW | 0,26 | 0,51 | 0,65 | 0,66 | 1,04 | 1,27 | 1,11 | 1,57 | 1,96 | 1,55 | 2,10 | 2,56 | |
| Heating (E) | kW | 0,64 | 0,84 | 1,05 | 1,25 | 1,65 | 2,31 | 1,75 | 2,56 | 3,12 | 2,21 | 3,10 | 4,10 | |
| Dp Cooling (E) | kPa | 3,8 | 10,6 | 13,1 | 2,4 | 5,5 | 8,2 | 7,5 | 14,2 | 19,0 | 7,3 | 13,8 | 18,7 | |
| Dp Heating (E) | kPa | 3,2 | 8,8 | 10,9 | 2,0 | 4,6 | 6,8 | 6,2 | 11,8 | 15,8 | 6,1 | 11,5 | 15,5 | |
| Fan (E) | W | 6 | 10 | 17 | 9 | 18 | 28 | 9 | 21 | 35 | 17 | 27 | 38 | |
| Sound power (E) | dB(A) | 38 | 45 | 52 | 39 | 46 | 53 | 41 | 47 | 53 | 39 | 45 | 53 | |
| Sound pressure (*) | dB(A) | 29 | 36 | 43 | 30 | 37 | 44 | 32 | 38 | 44 | 30 | 36 | 44 | |

(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.

Carisma CFR–ECM Fan Coil Unit with Tangential Fan with EC Brushless Electronic Motor

Carisma CFR–ECM fan coils are designed to meet the frequent requirement in homes of combining the typical qualities of radiators, such as reduced depth and quiet operation, with the typical quality of fan coils for controlling the climate in environments all year round with a high comfort air outlet temperature.

They are available into two main versions: with front radial panel or with front panel for covering only. In winter, the first solution provides both a convective and radiant thermal exchange, further improving the feeling of well being. All models are supplied with **low energy consumption electronic motors**.

On demand, recessed versions, horizontal ceiling mounted versions and 4 pipe systems are available for installation in non residential buildings.

Technical characteristics of the main components:

Carisma CFR-ECM fan coils are available in two models:

- with coil for **MU** models;
- with coil coupled to a radiant element for MUR models.

MV model, aided by the water coil only, meet all the typical requirements of a fan coil with especially reduced size.

MVR model, in addition to the water coil, includes an integrated radiant element which enhances the efficiency of the unit, providing in winter both a convective and radiant static thermal exchange.

Frontal panel and remouable lateral corners (to inspect the compartment, electric or hydraulic connections) in galvanised steel painted with oven-dried epoxy powders RAL 9010.

<u>Casing</u> in high resistance galvanised steel.

<u>Coil:</u>

 Coil in copper pipes and aluminium fins with high efficiency turbulence. Eurokonus 3/4" threaded fittings, comply with the new requirements of EU standards; the headers are equipped with air vent and water drains. The coil is equipped with a sensor to detect water temperature. The standard position

of the hydraulic connections is on the left side looking at the unit from the front. However the coils are reversible: the side of the connections can therefore be inverted

on site. Right side connections are possible on demand. The coil is not suitable for use in corrosive atmosphere or in

- Radiant element (MVR models only) connected in

parallel to the coil and equipped with a thermostatic valve which opens when the water reaches a temperature of 29°C.

Fan assembly including tangential fan in synthetic material with offset fins (extremely silent) mounted on EPDM anti-vibration supports. Statically and dynamically balanced rotor, coupled directly on the motor shaft.

High efficiency EC **<u>electric motor</u>** BLDC for speed continuous control, with resin pack mounted on EPDM antivibration supports.

Reversible **SUPPLY air grid** in galvanised steel painted with oven-dried epoxy powders RAL 9010. Large size with high mechanical resistance.

Condensate collection tray in shockproof PVC, easily removable for periodical cleaning. Condensate collection tray in shockproof ABS for horizontal installation (optional).





Dimensions, Weight, Water content



| Dimension (mm) | | | | | | | | | |
|----------------|-----|-----|------|------|--|--|--|--|--|
| MODEL | 1 | 2 | 3 | 4 | | | | | |
| А | 698 | 898 | 1098 | 1298 | | | | | |
| В | 525 | 725 | 925 | 1125 | | | | | |

—— Weight (kg) —

| | | WEIGHT WITH | H PACKAGING | | WEIGHT WITHOUT PACKAGING | | | | | | |
|-------|------|-------------|-------------|------|--------------------------|------|------|------|--|--|--|
| MODEL | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | | | |
| MV | 15,0 | 17,0 | 20,0 | 23,0 | 12,5 | 14,0 | 16,5 | 19,5 | | | |
| MVR | 17,0 | 19,5 | 24,0 | 27,5 | 14,5 | 16,5 | 20,5 | 23,5 | | | |

— Water content (litres) —

| | | C | OIL | | RADIANT ELEMENT | | | | | | |
|-------|------|-----|------|------|-----------------|-----|-----|-----|--|--|--|
| MODEL | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | | | |
| MV | 0,47 | 0,8 | 1,13 | 1,46 | - | - | - | - | | | |
| MVR | 0,47 | 0,8 | 1,13 | 1,46 | 0,3 | 0,5 | 0,7 | 0,9 | | | |





The following standard rating conditions are used:

<u>COOLING</u> (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: +50°C Water flow rate as for the cooling conditions

Certification

| MODEL | | CFR-ECM 1 | | | CFR–ECM 2 | | | CF | R–ECI | M 3 | CFR-ECM 4 | | |
|-------------------------------|-------|-----------|------|------|-----------|------|------|------|-------|------|-----------|------|------|
| Speed | | MIN | MED | MAX | MIN | MED | MAX | MIN | MED | MAX | MIN | MED | MAX |
| Air flow | m³/h | 100 | 125 | 160 | 170 | 230 | 320 | 180 | 270 | 460 | 370 | 450 | 575 |
| Cooling total emission (E) | kW | 0,38 | 0,72 | 0,83 | 0,92 | 1,36 | 1,76 | 1,51 | 2,11 | 2,56 | 1,99 | 2,70 | 3,31 |
| Cooling sensible emission (E) | kW | 0,26 | 0,51 | 0,65 | 0,66 | 1,04 | 1,27 | 1,11 | 1,57 | 1,96 | 1,55 | 2,10 | 2,56 |
| Heating (E) | kW | 0,64 | 0,84 | 1,05 | 1,25 | 1,65 | 2,31 | 1,75 | 2,56 | 3,12 | 2,21 | 3,10 | 4,10 |
| Dp Cooling (E) | kPa | 3,8 | 10,6 | 13,1 | 2,4 | 5,5 | 8,2 | 7,5 | 14,2 | 19,0 | 7,3 | 13,8 | 18,7 |
| Dp Heating (E) | kPa | 3,2 | 8,8 | 10,9 | 2,0 | 4,6 | 6,8 | 6,2 | 11,8 | 15,8 | 6,1 | 11,5 | 15,5 |
| Fan (E) | W | 5 | 7 | 11 | 6 | 9 | 19 | 7 | 11 | 20 | 8 | 12 | 24 |
| Sound power (E) | dB(A) | 38 | 45 | 52 | 39 | 46 | 53 | 41 | 47 | 53 | 39 | 45 | 53 |
| Sound pressure (*) | dB(A) | 29 | 36 | 43 | 30 | 37 | 44 | 32 | 38 | 44 | 30 | 36 | 44 |

(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.



Carisma CRC MUI uersion Fan Coil Unit with Centrifugal Fan with Asynchronous Motor

Range includes **5 air flow rates** (from 145 to 925 m³/h) each equipped with 4 row coil and with the possibility to add a 1 row coil for 4 pipe systems.

t 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 of the main components:

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.

<u>Output grills:</u> in grey-finished extruded aluminium.

Inner casing: made from galvanized steel insulated with polyolefin (PO) foam (class M1).

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.

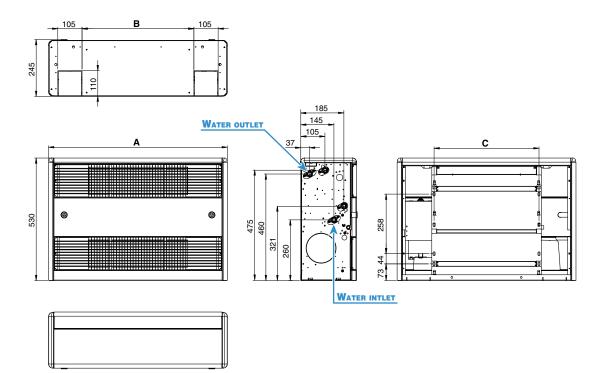
Electric motor: the motor is wired for single phase and has six speeds, three of which are connected, with capacitor. The motor is fitted on sealed for life bearings and is secured on anti-vibration and self-lubricating mountings. Internal thermal protection with automatic reset, protection IP 20, class 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 polyolefin (PO) foam (class M1). The outside diameter of the condensate discharge pipe is 15 mm.

Dimensions, Weight, Water content



Dimension (mm) -

| MODEL | CRC 24 MVI | CRC 44 MVI | CRC 54 MVI | CRC 64 MVI | CRC 74 MVI |
|-------|------------|------------|------------|------------|------------|
| Α | 775 | 990 | 1205 | 1205 | 1420 |
| В | 487 | 702 | 917 | 917 | 1132 |
| С | 454 | 669 | 884 | 884 | 1099 |

—— Weight (kg) —

| | | | WEIGH. | r with pac | KAGING | | CKAGING | | | | |
|------|-------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| N | IODEL | 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 |
| RON | 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 | | |
| ROV | 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°CEntering water temperature:+50°CWater flow rate as for the cooling conditions

| MODEI | L | | CRC 24 MVI | | | | | CRC 44 MVI | | | | | CRC 54 MVI | | | | | | | |
|----------------------------|------------------|-------|--------------|------|--------------|------|--------------|------------|------|--------------|--------------|------|--------------|------|------|--------------|------|--------------|--------------|------|
| Canad | | | 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 |
| Speed | | | MIN | | MED | | MAX | | | MIN | MED | | MAX | | | MIN | | MED | | MAX |
| Air flow | | m³/h | 145 | 170 | 220 | 250 | 295 | 340 | 185 | 265 | 335 | 400 | 485 | 570 | 250 | 315 | 420 | 495 | 545 | 650 |
| Cooling total emission (E) | | kW | 1,01 | 1,13 | 1,43 | 1,59 | 1,81 | 2,04 | 1,32 | 1,83 | 2,28 | 2,65 | 3,12 | 3,56 | 1,79 | 2,19 | 2,83 | 3,25 | 3,54 | 4,09 |
| Cooling sensible emission | (E) | kW | 0,74 | 0,83 | 1,07 | 1,19 | 1,38 | 1,57 | 0,95 | 1,34 | 1,68 | 1,97 | 2,34 | 2,69 | 1,30 | 1,60 | 2,08 | 2,40 | 2,63 | 3,07 |
| Heating (E) | | kW | 1,18 | 1,34 | 1,72 | 1,92 | 2,20 | 2,50 | 1,54 | 2,16 | 2,72 | 3,17 | 3,76 | 4,34 | 2,06 | 2,53 | 3,30 | 3,81 | 4,17 | 4,83 |
| 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 | 9,2 | 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 | 3,9 | 4,9 | 7,5 | 9,2 | 11,6 | 14,6 | 2,5 | 4,6 | 6,9 | 9,0 | 12,2 | 15,6 | 5,7 | 8,3 | 13,1 | 17,0 | 19,9 | 25,7 |
| 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 |
| | ating (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 |
| coil (Water 70/60°C) 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 | | | | | |
|---|-------------|------------|--------------|------|--------------|-------|------|--------------|------|--------------|-------|--------------|--|
| Crossed | 1 (E |) 2 | 3 (E) | 4 | 5 (E) | 6 | 1 | 2 (E) | 3 | 4 (E) | 5 | 6 (E) | |
| Speed | | I | MED | | MAX | | | MIN | | MED | | MAX | |
| Air flow m ³ /l | 415 | 505 | 590 | 680 | 760 | 830 | 445 | 535 | 630 | 735 | 840 | 925 | |
| Cooling total emission (E) kW | 2,83 | 3,38 | 3,86 | 4,38 | 4,79 | 5,13 | 3,03 | 3,56 | 4,08 | 4,64 | 5,17 | 5,58 | |
| Cooling sensible emission (E) kW | 2,07 | 2,49 | 2,86 | 3,27 | 3,60 | 3,87 | 2,22 | 2,62 | 3,03 | 3,47 | 3,89 | 4,23 | |
| Heating (E) kW | 3,39 | 4,07 | 4,69 | 5,35 | 5,88 | 6,35 | 3,55 | 4,20 | 4,86 | 5,55 | 6,19 | 6,71 | |
| 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 | 11,0 | 15,2 | 19,5 | 24,7 | 29,3 | 33,5 | 7,7 | 10,3 | 13,3 | 16,9 | 20,5 | 23,7 | |
| 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 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 | |
| coil (Water 70/60°C) 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 m³ room and a reverberation time of 0.5 sec.

Wall electronic controls

Can be connected only to wall controls for Fan Coil Units with asynchronous motors (infra-red remote control excluded). For the Characteristics, see Page 265.

<u>PSM-DI</u> multifunction control and <u>Sabianet</u> management system for a network of fan coils

For the Characteristics, see Page 269.

Auailable accessories: Plinth PLH



Carisma CRSO High Pressure Fan Coil Unit with Asynchronous Motor

Range includes **Y air flow rates** (from 375 to 2220 m³/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**.

R II range is compliant with the new ERP 2015 Regulation (EU) No. 327/2011 which requires uery low electric consumption ratings in relation to performances provided.

Technical characteristics of the main components:

<u>Casing</u>: made from galvanized steel insulated with polyolefin (PO) foam (class M1).

<u>Filter</u> 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.

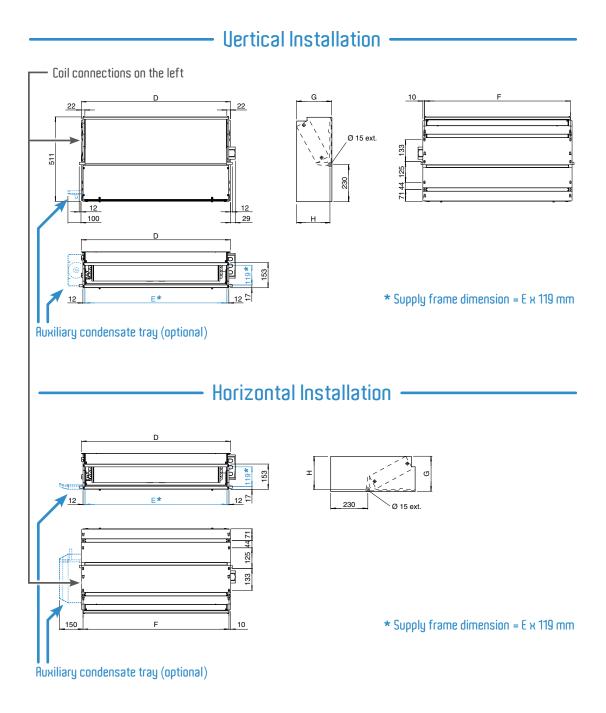
The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.

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: "L"-shaped, fitted on the inner casing, for size 1÷3 made of plastic and for size 4 made in painted steel; the tray is insulated with polyolefin (PO) foam (class M1). The outside diameter of the condensate discharge pipe is 15 mm.

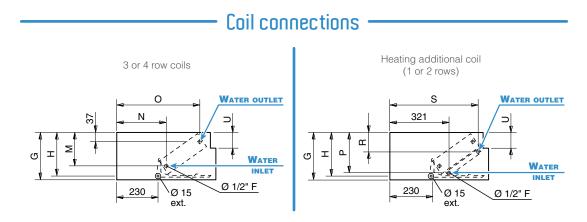


Dimensions, Weight, Water content





Dimensions, Weight, Water content



Dimension (mm) -

| MODEL | 1 | 2 | 3 | 4 |
|-------|-----|-----|------|------|
| D | 689 | 904 | 1119 | 1570 |
| E | 645 | 860 | 1075 | 1526 |
| F | 669 | 884 | 1099 | 1550 |
| G | 218 | 248 | 248 | 248 |
| Н | 205 | 235 | 235 | 235 |
| М | 145 | 170 | 170 | 170 |
| N | 260 | 270 | 270 | 270 |
| 0 | 460 | 450 | 450 | 450 |
| Р | 185 | 210 | 210 | 210 |
| R | 105 | 110 | 110 | 110 |
| S | 475 | 465 | 465 | 465 |
| U | 65 | 95 | 95 | 95 |

- Weight (kg) ·

| | | | WEIGHT WITH | I PACKAGING | | WEIGHT WITHOUT PACKAGING | | | | | |
|------|-------|------|-------------|-------------|------|--------------------------|------|------|------|--|--|
| N | IODEL | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | | |
| | 3 | 19,1 | 26,1 | 30,4 | 47,7 | 17,3 | 23,5 | 27,3 | 43,3 | | |
| S | 3+1 | 20,3 | 27,6 | 32,2 | 50,0 | 18,5 | 25,0 | 29,1 | 45,6 | | |
| ROWS | 3+2 | 21,0 | 28,5 | 33,3 | - | 19,2 | 25,9 | 30,2 | - | | |
| æ | 4 | 20,1 | 27,4 | 31,9 | 49,5 | 18,3 | 24,8 | 28,8 | 45,1 | | |
| | 4+1 | 21,3 | 28,9 | 33,7 | 51,8 | 19,5 | 26,3 | 30,6 | 47,4 | | |

- Water content (litres) -

| N | IODEL | 1 | 2 | 3 | 4 |
|-----|-------|-----|-----|-----|-----|
| | 3 | 0,9 | 1,6 | 1,9 | 3,2 |
| NS | 4 | 1,3 | 2,2 | 2,8 | 4,2 |
| ROV | +1 | 0,3 | 0,5 | 0,6 | 0,9 |
| | +2 | 0,6 | 1,0 | 1,2 | - |





• Units with 3 and 4 row coil •

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

<u>COOLING</u> (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.

<u>HEATING</u> (winter mode) Entering air temperature: +

Entering air temperature: +20°C **Entering water temperature:** +50°C Water flow rate as for the cooling conditions

| MODEL | | CRSO 13 | | C | RSO 2 | 23 | C | RSO 33 | | CRSO 43 | | | |
|---|-------|----------------|---------|------|-------|---------|--------|--------|---------|----------------|------|---------|------|
| Speed (E) | | 2 | 3 | 4 | 2 | 3 | 4 | 2 | 3 | 4 | 1 | 2 | 3 |
| Air flow (E) | m³/h | 240 | 285 | 310 | 470 | 525 | 580 | 760 | 885 | 960 | 945 | 1155 | 1285 |
| Available pressure (E) | Pa | 40 | 50 | 60 | 40 | 50 | 60 | 40 | 50 | 60 | 35 | 50 | 60 |
| Cooling total emission (E) | kW | 1,58 | 1,81 | 1,93 | 2,94 | 3,19 | 3,42 | 4,44 | 4,92 | 5,20 | 5,95 | 6,87 | 7,40 |
| Cooling sensible emission (E) | kW | 1,14 | 1,31 | 1,41 | 2,17 | 2,37 | 2,57 | 3,36 | 3,80 | 4,05 | 4,39 | 5,16 | 5,62 |
| Heating (E) | kW | 1,91 | 2,22 | 2,39 | 3,57 | 3,92 | 4,25 | 5,63 | 6,36 | 6,79 | 7,29 | 8,62 | 9,41 |
| Dp Cooling (E) | kPa | 9,0 | 11,5 | 12,9 | 10,6 | 12,3 | 13,9 | 11,4 | 13,7 | 15,1 | 8,9 | 11,5 | 13,1 |
| Dp Heating (E) | kPa | 6,9 | 9,0 | 10,3 | 8,3 | 9,8 | 11,4 | 9,0 | 11,0 | 11,9 | 6,8 | 9,2 | 10,8 |
| Fan (E) | W | 40 | 46 | 55 | 82 | 90 | 97 | 107 | 121 | 134 | 140 | 148 | 158 |
| Sound power outlet (E) | dB(A) | 44 | 47 | 50 | 46 | 49 | 51 | 51 | 54 | 57 | 52 | 56 | 58 |
| Sound power inlet + radiated (E) | dB(A) | 52 | 54 | 57 | 52 | 54 | 57 | 57 | 60 | 63 | 59 | 62 | 64 |
| Sound pressure outlet (*) | dB(A) | 35 | 38 | 41 | 37 | 40 | 42 | 42 | 45 | 48 | 43 | 47 | 49 |
| Sound pressure inlet + radiated (*) | dB(A) | 43 | 45 | 48 | 43 | 45 | 48 | 48 | 51 | 54 | 50 | 53 | 55 |
| Plenum code (E) | | | 9066363 | } | | 9069222 |) - | | 9066368 | } | | 9069224 | |

| MODEL | | CRSO 14 | | C | RSO 2 | 24 | C | RSO 3 | 34 | CRSO 44 | | | |
|-------------------------------------|-------|---------|---------|------|-------|---------|------|-------|---------|----------------|------|---------|-------|
| Speed (E) | | 2 | 3 | 4 | 2 | 3 | 4 | 2 | 3 | 4 | 1 | 2 | 3 |
| Air flow (E) | m³/h | 240 | 285 | 310 | 470 | 525 | 580 | 760 | 885 | 960 | 945 | 1155 | 1285 |
| Available pressure (E) | Pa | 40 | 50 | 60 | 40 | 50 | 60 | 40 | 50 | 60 | 35 | 50 | 60 |
| Cooling total emission (E) | kW | 1,74 | 2,01 | 2,15 | 3,27 | 3,57 | 3,85 | 4,80 | 5,36 | 5,68 | 6,51 | 7,59 | 8,22 |
| Cooling sensible emission (E) | kW | 1,23 | 1,43 | 1,54 | 2,32 | 2,55 | 2,77 | 3,52 | 3,99 | 4,25 | 4,68 | 5,54 | 6,05 |
| Heating (E) | kW | 1,90 | 2,20 | 2,40 | 3,90 | 4,30 | 4,69 | 6,00 | 6,83 | 7,31 | 7,85 | 9,39 | 10,30 |
| Dp Cooling (E) | kPa | 5,4 | 7,0 | 7,9 | 18,1 | 21,2 | 24,3 | 9,7 | 11,9 | 13,2 | 11,8 | 15,6 | 18,0 |
| Dp Heating (E) | kPa | 4,2 | 5,6 | 6,4 | 14,3 | 17,1 | 20,1 | 8,0 | 9,3 | 10,5 | 11,0 | 13,8 | 17,0 |
| Fan (E) | W | 40 | 46 | 55 | 82 | 90 | 97 | 107 | 121 | 134 | 140 | 148 | 158 |
| Sound power outlet (E) | dB(A) | 44 | 47 | 50 | 46 | 49 | 51 | 51 | 54 | 57 | 52 | 56 | 58 |
| Sound power inlet + radiated (E) | dB(A) | 52 | 54 | 57 | 52 | 54 | 57 | 57 | 60 | 63 | 59 | 62 | 64 |
| Sound pressure outlet (+) | dB(A) | 35 | 38 | 41 | 37 | 40 | 42 | 42 | 45 | 48 | 43 | 47 | 49 |
| Sound pressure inlet + radiated (*) | dB(A) | 43 | 45 | 48 | 43 | 45 | 48 | 48 | 51 | 54 | 50 | 53 | 55 |
| Plenum code (E) | | | 9066363 | } | | 9069222 |) | | 9066368 | } | | 9069224 | 1 |

(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 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: +20 C +70°C E.W.T. +60°C L.W.T.

| MODEL | | CRS0 13+1 | | CR | SO 23 | 3+1 | CRSO 33+1 | | | CRS0 43+1 | | | |
|---|-------|-----------|---------|------|-------|---------|-----------|---------|------|-----------|---------|------|------|
| Speed (E) | | 2 | 3 | 4 | 2 | 3 | 4 | 2 | 3 | 4 | 1 | 2 | 3 |
| Air flow (E) | m³/h | 240 | 285 | 310 | 470 | 525 | 580 | 760 | 885 | 960 | 945 | 1155 | 1285 |
| Available pressure (E) | Pa | 40 | 50 | 60 | 40 | 50 | 60 | 40 | 50 | 60 | 35 | 50 | 60 |
| Cooling total emission (E) | kW | 1,58 | 1,81 | 1,93 | 2,94 | 3,19 | 3,42 | 4,44 | 4,92 | 5,20 | 5,95 | 6,87 | 7,40 |
| Cooling sensible emission (E) | kW | 1,14 | 1,31 | 1,41 | 2,17 | 2,37 | 2,57 | 3,36 | 3,80 | 4,05 | 4,39 | 5,16 | 5,62 |
| Heating (E) | kW | 1,66 | 1,87 | 1,98 | 2,85 | 3,08 | 3,28 | 4,14 | 4,57 | 4,82 | 5,55 | 6,33 | 6,79 |
| Dp Cooling (E) | kPa | 9,0 | 11,5 | 12,9 | 11,2 | 13,0 | 14,7 | 13,9 | 17,7 | 19,0 | 8,9 | 11,5 | 13,1 |
| Dp Heating (E) | kPa | 5,3 | 6,6 | 7,3 | 3,8 | 4,3 | 4,8 | 6,2 | 7,4 | 8,1 | 13,5 | 17,2 | 19,5 |
| Fan (E) | W | 40 | 46 | 55 | 82 | 90 | 97 | 107 | 121 | 134 | 140 | 148 | 158 |
| Sound power outlet (E) | dB(A) | 44 | 47 | 50 | 46 | 49 | 51 | 51 | 54 | 57 | 52 | 56 | 58 |
| Sound power inlet + radiated (E) | dB(A) | 52 | 54 | 57 | 52 | 54 | 57 | 57 | 60 | 63 | 59 | 62 | 64 |
| Sound pressure outlet (+) | dB(A) | 35 | 38 | 41 | 37 | 40 | 42 | 42 | 45 | 48 | 43 | 47 | 49 |
| Sound pressure inlet + radiated (\star) | dB(A) | 43 | 45 | 48 | 43 | 45 | 48 | 48 | 51 | 54 | 50 | 53 | 55 |
| Plenum code (E) | | | 9066363 | ; | | 9069222 | | 9066368 | | | 9069224 | | |

Wall electronic controls

— Standard 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-MB | Wall control (to be used with UPM-AU or UP-AU only) |
| TM0-503-SV2 | Automatic speed control with electronic thermostat to be mounted in the DIN 503 box |
| T2T | Electromechanical thermostat with summer/winter switch (only for 2 pipe units) |
| UPM-AU | Power unit for WM-AU and T-MB remote controls, fitted on the unit |
| UP-AU | Power unit for WM-AU and T-MB remote controls, not fitted on the unit |

- FreeSabiana wireless control system

Free-Com Remote control to be used with electronic boards described at page 267

Electronic controls for <u>MB boards</u>

| MB-M | MB electronic board fitted on the unit |
|---------|--|
| MB-S | MB electronic board supplied with separate packaging |
| T-MB | Wall control (to be used with MB board only) |
| RS-RT03 | RT03 infra-red remote control with receiver supplied with separate packaging (to be used with MB board only) |
| RT03 | RT03 infra-red remote control supplied with separate packaging (to be used with MB board only) |
| RS | Receiver for RT03 infra-red remote control supplied with separate packaging (to be used with MB board only) |
| PSM-DI | Multifunction control (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 |
| SIOS | Relay output board for Sabianet |

NOTES: for more details about the Controls, see Page 265. for full list of main Accessories, see Page 273.







<u>Wall</u> **Electronic controls**





<u>RT03</u> infra-red remote control



Carisma CRSO



Carisma CRS–ECM High Pressure Fan Coil Unit with EC Brushless Electronic Motor and Inverter Board

Range includes **3 air flow rates** (from 350 to 1450 m³/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 Uary** 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 **brushless** and **sensor**– **less** 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 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 (50% less in comparison to CRSO AC motor) with absorption values under normal operating conditions that **do not exceed 50 Watt**. The excellent values of the CRS-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.

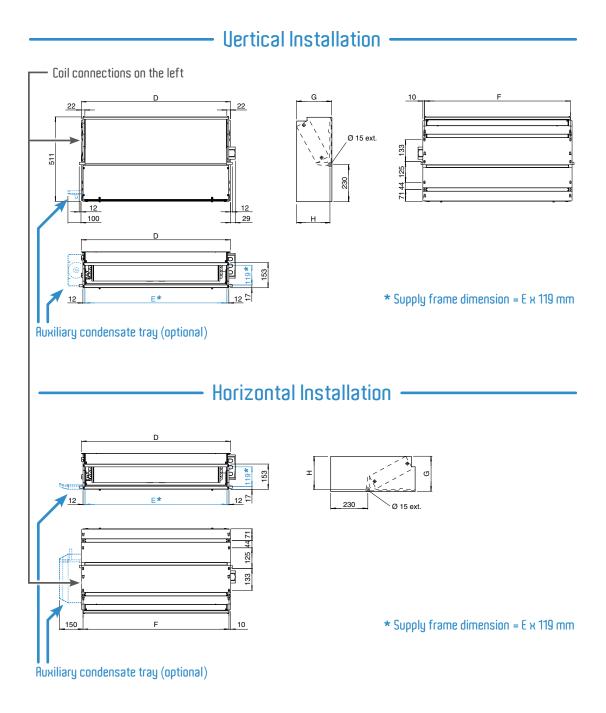


Technical characteristics of the main components:

For the technical characteristics of the various components refer to Carisma CRSO Fan Coil Unit, except for

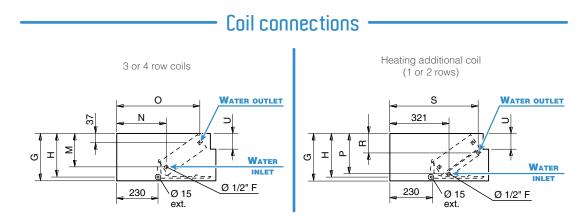
Electronic motor: three phase permanent magnet brushless electronic motor that is controlled with current reconstructed according to a **BLAC** sinusoidal wave. The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a **Switching system**, it generates a three-phase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

Dimensions, Weight, Water content





Dimensions, Weight, Water content



Dimension (mm) -

| MODEL | 1 | 2 | 3 |
|-------|-----|-----|------|
| D | 689 | 904 | 1119 |
| E | 645 | 860 | 1075 |
| F | 669 | 884 | 1099 |
| G | 218 | 248 | 248 |
| Н | 205 | 235 | 235 |
| М | 145 | 170 | 170 |
| N | 260 | 270 | 270 |
| 0 | 460 | 450 | 450 |
| Р | 185 | 210 | 210 |
| R | 105 | 110 | 110 |
| S | 475 | 465 | 465 |
| U | 65 | 95 | 95 |

- Weight (kg) ·

| | | WE | IGHT WITH PACKAG | ING | WEIGHT WITHOUT PACKAGING | | | | | |
|------|-------|------|------------------|------|--------------------------|------|------|--|--|--|
| N | IODEL | 1 | 2 | 3 | 1 | 2 | 3 | | | |
| | 3 | 19,1 | 26,1 | 30,4 | 17,3 | 23,5 | 27,3 | | | |
| S | 3+1 | 20,3 | 27,6 | 32,2 | 18,5 | 25,0 | 29,1 | | | |
| ROWS | 3+2 | 21,0 | 28,5 | 33,3 | 19,2 | 25,9 | 30,2 | | | |
| ä | 4 | 20,1 | 27,4 | 31,9 | 18,3 | 24,8 | 28,8 | | | |
| | 4+1 | 21,3 | 28,9 | 33,7 | 19,5 | 26,3 | 30,6 | | | |

Water content (litres) -

| N | IODEL | 1 | 2 | 3 |
|-----|-------|-----|-----|-----|
| | 3 | 0,9 | 1,6 | 1,9 |
| NS | 4 | 1,3 | 2,2 | 2,8 |
| ROV | +1 | 0,3 | 0,5 | 0,6 |
| | +2 | 0,6 | 1,0 | 1,2 |





- Units with 3 and 4 row coil -

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

<u>COOLING</u> (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:** +50°C Water flow rate as for the cooling conditions

| MODEL | | CR | S–ECM | 13 | CR | S–ECM | 23 | CR | S–ECM | 33 | |
|---------------------------------------|-------|--------------|--------------|--------------|--------------|--------------|--------------|----------------|----------------|----------------|--|
| Inverter Power (V) | | 5 (E) | 7 (E) | 9 (E) | 4 (E) | 6 (E) | 8 (E) | 4,5 (E) | 6,5 (E) | 8,5 (E) | |
| Speed | | MIN | MED | MAX | MIN | MED | MAX | MIN | MED | MAX | |
| Air flow (E) | m³/h | 240 | 280 | 325 | 420 | 485 | 560 | 720 | 820 | 950 | |
| Available pressure (E) | Ра | 35 | 50 | 65 | 35 | 50 | 65 | 35 | 50 | 65 | |
| Cooling total emission (E) | kW | 1,55 | 1,76 | 1,98 | 2,66 | 2,98 | 3,33 | 4,21 | 4,64 | 5,16 | |
| Cooling sensible emission (E) | kW | 1,16 | 1,33 | 1,51 | 2,02 | 2,28 | 2,57 | 3,27 | 3,64 | 4,10 | |
| Heating (E) | kW | 1,91 | 2,18 | 2,48 | 3,25 | 3,46 | 4,10 | 5,33 | 5,94 | 6,68 | |
| Dp Cooling (E) | kPa | 8,9 | 11,1 | 13,7 | 9,0 | 11,0 | 13,4 | 10,5 | 12,4 | 15,0 | |
| Dp Heating (E) | kPa | 7,3 | 9,0 | 11,3 | 7,4 | 9,1 | 11,1 | 8,6 | 10,2 | 12,3 | |
| Fan (E) | W | 24 | 32 | 43 | 30 | 44 | 64 | 50 | 71 | 102 | |
| Sound power outlet (E) | dB(A) | 45 | 48 | 52 | 45 | 49 | 52 | 50 | 53 | 56 | |
| Sound power inlet + radiated (E) | dB(A) | 52 | 54 | 58 | 51 | 55 | 58 | 56 | 60 | 63 | |
| Sound pressure outlet (*) | dB(A) | 36 | 39 | 43 | 36 | 40 | 43 | 41 | 44 | 47 | |
| Sound pressure inlet + radiated (*) | dB(A) | 43 | 45 | 49 | 42 | 46 | 49 | 47 | 51 | 54 | |
| Plenum code (E) | | | 9066363 | | | 9069222 | | 9066368 | | | |
| Energy classification FCEER (**) (E) | | | C | | | В | | В | | | |
| Energy classification FCCOP (***) (E) | | | В | | | Α | | A | | | |

| MODEL | | CR | S–ECM | 14 | CR | S–ECM | 24 | CR | S–ECM | 34 | | |
|---------------------------------------|-------|--------------|--------------|--------------|--------------|--------------|--------------|----------------|----------------|----------------|--|--|
| Inverter Power (V) | | 5 (E) | 7 (E) | 9 (E) | 4 (E) | 6 (E) | 8 (E) | 4,5 (E) | 6,5 (E) | 8,5 (E) | | |
| Speed | | MIN | MED | MAX | MIN | MED | MAX | MIN | MED | MAX | | |
| Air flow (E) | m³/h | 240 | 280 | 325 | 420 | 485 | 560 | 720 | 820 | 950 | | |
| Available pressure (E) | Ра | 35 | 50 | 65 | 35 | 50 | 65 | 35 | 50 | 65 | | |
| Cooling total emission (E) | kW | 1,69 | 1,93 | 2,19 | 2,91 | 3,29 | 3,70 | 4,49 | 4,98 | 5,58 | | |
| Cooling sensible emission (E) | kW | 1,25 | 1,43 | 1,64 | 2,15 | 2,44 | 2,77 | 3,42 | 3,82 | 4,32 | | |
| Heating (E) | kW | 2,05 | 2,36 | 2,69 | 3,52 | 3,99 | 4,53 | 5,72 | 6,40 | 7,21 | | |
| Dp Cooling (E) | kPa | 5,4 | 6,8 | 8,5 | 15,1 | 18,7 | 23,0 | 9,1 | 10,9 | 13,3 | | |
| Dp Heating (E) | kPa | 4,4 | 5,5 | 7,0 | 12,4 | 15,4 | 19,0 | 7,5 | 9,0 | 10,9 | | |
| Fan (E) | W | 24 | 32 | 43 | 30 | 44 | 64 | 50 | 71 | 102 | | |
| Sound power outlet (E) | dB(A) | 45 | 48 | 52 | 45 | 49 | 52 | 50 | 53 | 56 | | |
| Sound power inlet + radiated (E) | dB(A) | 52 | 54 | 58 | 51 | 55 | 58 | 56 | 60 | 63 | | |
| Sound pressure outlet (*) | dB(A) | 36 | 39 | 43 | 36 | 40 | 43 | 41 | 44 | 47 | | |
| Sound pressure inlet + radiated (*) | dB(A) | 43 | 45 | 49 | 42 | 46 | 49 | 47 | 51 | 54 | | |
| Plenum code (E) | | | 9066363 | | | 9069222 | | 9066368 | | | | |
| Energy classification FCEER (**) (E) | | | В | | | Α | | В | | | | |
| Energy classification FCCOP (***) (E) | | | В | | | Α | | A | | | | |

(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.

(******) **FCEER** = Energy classification in Cooling.

(*******) FCCOP = Energy classification in Heating.



Wall electronic controls

— Standard models —

| WM-AU | Automatic speed control with electronic thermostat and summer/winter switch (to be used with UPM-AU or UP-AU only) |
|----------|--|
| T-MB | Wall control (to be used with UPM-AU or UP-AU only) |
| WM-S-ECM | Continuous fan speed control with electronic thermostat, summer/winter switch and liquid crystal display |
| UPM-AU | Power unit for WM-AU and T-MB remote controls, fitted on the unit |
| UP-AU | Power unit for WM-AU and T-MB remote controls, not fitted on the unit |

Electronic controls for <u>MB boards</u>

| MB-ECM-M | MB electronic board fitted on the unit |
|----------|--|
| MB-ECM-S | MB electronic board supplied with separate packaging |
| T-MB | Wall control (to be used with MB board only) |
| RS-RT03 | RT03 infra-red remote control with receiver supplied with separate packaging (to be used with MB board only) |
| RT03 | RT03 infra-red remote control supplied with separate packaging (to be used with MB board only) |
| RS | Receiver for RT03 infra-red remote control supplied with separate packaging (to be used with MB board only) |
| PSM-DI | Multifunction control (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 |
| SIOS | Relay output board for Sabianet |



Maestro 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 (all sizes, even at the lowest speed, have a residual pressure head of at least 160 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. 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 of the main components:

Casing: made with galvanized steel insulated with polyolefin (PO) foam (class M1).

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 $1\div5$) 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.



<u>Condensate collection tray:</u> made from galvanized steel insulated with polyolefin (PO) foam (class M1).

Il range is compliant with the new ERP 2015 Regulation (EU) No. 327/2011 which requires uery low electric consumption ratings in relation to performances provided.

Dimensions, Weight, Water content

| Left co | nnec | tions | (star | ndəri | d) | | | | | | | | | | | |
|---|---|--|---|--|--|--|---|---|---|--|---|--|--|--|---|---|
| Fan Side (c | z O O O | - | Fil | ter | | | | 50 140 | nlet) | ļ | | A E | | | - - | 50 61 |
| MODE MTO 1- MTO 6- Right con | ÷5 -7 | 0 209 304 | MENSIO P 103 154 (on r | Q 169 264 Eque | R 243 338 | | | 016 236 | ϥ | | | G A E | | | | |
| Filter Side (inle | - | 0 | 90 | _ل ع | Fan S | ide (c | outle | | | | | E | | | | |
| Filter Side (inle | - | 0 | 30 | _ل ع | Fan S | ide (c Mensio | | | | | | A | | COIL | | 9 |
| Filter | - | B | 3 2 C | _ل ع | Fan S | | | | | M | N | A | (IAIN | ADD | | 9- <u>-</u> |
| Filter Side (inle | et) | B | | _لر ۷ | Fan S | MENSIO | INS | t) | E L mm | M | N | A | IAIN | |) | |
| Filter Side (inle | et) | | С | D | Fan S | MENSIO F | ONS G | t) Н | | | | A | IAIN | ADD |) | |
| Filter Side (inle | et) | mm | C | D | Fan S DI E mm | MENSIO F mm | ONS G mm | t) н тт | mm | mm | mm | A M . (1) IN | IAIN 2 OUT | ADD | | |
| Filter Side (inle | t) A mm 1133 | mm 698 | C mm 310 | D mm 255 | Fan S DI E mm 991 | MENSIO F mm 620 | 0NS G mm 1185 | t) H mm 54 54 | mm 245 245 295 | mm 50 | mm 249 | A M . (1) IN 3/4" | IAIN OUT 3/4" | ADD 3/4 3/4 3/4 |))))))))))))))))))) | IONAL (4) OUT 3/4" 3/4" |
| Filter Side (inle MODEL MTO 1 MTO 2 MTO 3 MTO 4 | t) A mm 1133 1133 | mm 698 698 | C mm 310 310 | D mm 2555 2555 | Fan S DI E mm 991 991 | MENSIO F mm 620 620 | ONS G mm 1185 1185 | t) H mm 54 54 | mm 245 245 | mm 50 50 | mm 249 249 | A M . (1) IN 3/4" 1" | IAIN 2 0UT 3/4" 1" | ADD 3/4 3/4 3/4 |))))))))))))))))))) | IONAL (4) OUT 3/4" |
| Filter Side (inle MODEL MTO 1 MTO 2 MTO 3 MTO 4 MTO 5 | A mm 1133 1133 1133 | mm 698 698 698 | C mm 310 310 360 | D mm 255 255 305 | Fan S DI E mm 991 991 991 | MENSIO F mm 620 620 620 | ONS G mm 1185 1185 1185 | t) H mm 54 54 54 | mm 245 245 295 | mm 50 50 50 | mm 249 249 299 | A M . (1) IN 3/4" 1" 1" | IAIN 2000 3/4" 1" 1" | ADD (3) IN 3/4 3/4 3/4 1" | 27 27 27 27 | IONAL (4) OUT 3/4" 3/4" 3/4" 1" 1" |
| Filter Side (inle MODEL MTO 1 MTO 2 MTO 3 MTO 4 MTO 5 MTO 6 | A mm 1133 1133 1133 1445 | mm 698 698 698 853 | C mm 310 310 360 360 | D mm 255 305 293 | Fan S DI E mm 991 991 991 1302 | MENSIO F mm 620 620 620 775 | ONS G mm 1185 1185 1185 1497 | t) H mm 54 54 54 54 58 | mm 245 245 295 291 | mm 50 50 50 50 | mm 249 249 299 295 | A M . (1) IN 3/4" 1" 1" 1 1/4" | IAIN 2 0 0 0 0 1 1 1 1 1 1 1/4" | ADD 3 1N 3/4 3/4 3/4 1" | 22 | IONAL () 0UT 3/4" 3/4" 1" 1" 1" |
| Filter Side (inle MODEL MTO 1 MTO 2 MTO 3 MTO 4 MTO 5 | A mm 1133 1133 1445 | mm 698 698 698 853 853 | C mm 310 310 360 360 435 | D mm 2555 2555 293 368 | Fan S DI E mm 991 991 991 1302 1302 | MENSIO F mm 620 620 620 775 775 | ONS G mm 1185 1185 1185 1497 1497 | t) H mm 54 54 54 58 58 58 59 | mm 245 245 295 291 367 | mm 50 50 50 54 54 | mm 249 249 299 295 370 | A M . (1) IN 3/4" 1" 1 1/4" 1 1/4" | IAIN 2000 3/4" 1" 1" 1 1/4" 1 1/4" | ADD 3 IN 3/4 3/4 3/4 1" 1" | 237 237 237 237 | IONAL (4) OUT 3/4" 3/4" 3/4" 1" 1" |
| Filter Side (inle MODEL MTO 1 MTO 2 MTO 3 MTO 4 MTO 5 MTO 6 | A mm 1133 1133 1445 1535 1535 | mm 698 698 853 853 1100 1100 | C mm 310 310 360 435 488 588 | D mm 255 255 305 293 368 421 521 | Fan S DI E mm 991 991 1302 1302 1303 1393 (AGING | MENSIO F mm 620 620 620 775 775 1022 1022 (kg) | NS G mm 1185 1185 1185 1497 1497 1587 | t) H mm 54 54 54 54 58 58 59 59 59 | mm 245 245 295 291 367 416 516 | mm 50 50 54 54 55 55 55 | mm 249 299 295 370 421 521 | A M 3/4" 1" 1 1/4" 1 1/4" 1 1/4" 1 1/4" | IAIN 2 OUT 3/4" 1" 1 1/4" 1 1/4" 1 1/4" 1 1/4" WATE | ADD 3/4 3/4 3/4 1" 1" 1" 1" 1" |) | IONAL () 0UT 3/4" 3/4" 1" 1" 1" 1" liters) |
| Filter Side (inle MODEL MTO 1 MTO 2 MTO 3 MTO 4 MTO 5 MTO 6 MTO 7 | A mm 1133 1133 1445 1535 1535 | mm 698 698 853 853 1100 1100 | C mm 310 310 360 435 488 588 | D mm 255 255 305 293 368 421 521 | Fan S DI E mm 991 991 1302 1302 1303 1393 | MENSIO F mm 620 620 620 775 775 1022 1022 (kg) | NS G mm 1185 1185 1185 1497 1497 1587 | t) H mm 54 54 54 54 58 58 59 59 59 | mm 245 245 295 291 367 416 516 | mm 50 50 54 54 55 55 55 | mm 249 249 299 295 370 421 521 | A M 3/4" 1" 1 1/4" 1 1/4" 1 1/4" 1 1/4" | IAIN 2 OUT 3/4" 1" 1 1/4" 1 1/4" 1 1/4" 1 1/4" | ADD 3/4 3/4 3/4 1" 1" 1" 1" | » » | IONAL () 0UT 3/4" 3/4" 3/4" 1" 1" 1" |

53 49 53

62 57 61

86 79 84

98 89

6+2R

140

160

54

51

59 63

6R

133

151

55

63

87 82 87

98 92 98

4+2R

137

155

94

4R

127

143

56

65

90

102

6+2R

143

163

2,9

3,5

4,7

5,7

4R

7,6

9,7

3,7

4,6 1,4

6,0

7,1

6R

11,1

13,8

1,1

2,0

2,7

1,8

2,4

3,2

4,1

2R

4,1

5,5



MTO 2

MTO 3

MTO 4

MTO 5

MTO 6

MTO 7

46 50

54

75

85

4R

124

140

58

80

90

52 48 51

60

83

94 88 94

4+2R

134

152

56 60

78

6R

130

148

83



www.certiflash.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. + 7°C E.W.T. +12°C L.W.T. Water temperature:

HEATING (winter mode)

Entering air temperature: +20°C Entering water temperature: +50°C Water flow rate as for the cooling conditions

Certification

| MODEL MTO | | | 14 | | | 24 | | | 34 | | | 44 | | 5 | 4 (* | **) | 6 | 4 (1 | **) | 7 | 4 (* | **) |
|-------------------------------------|---------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------------|-------|-------|----------------|
| Speed (E) | | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| Air flow (E) | m³/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) | Ра | 25 | 50 | 75 | 15 | 50 | 80 | 30 | 50 | 70 | 35 | 50 | 67 | 35 | 50 | 70 | 150 | 150 | 150 | 150 | 150 | 150 |
| Cooling total emission (E) | kW | 4,28 | 5,36 | 6,11 | 5,16 | 7,24 | 8,44 | 9,06 | 10,18 | 11,18 | 11,33 | 12,98 | 14,23 | 15,04 | 16,81 | 18,52 | 12,99 | 19,51 | 24,19 | 23,06 | 27,09 | 33,09 |
| Cooling sensible emission (E) | kW | 3,36 | 4,41 | 5,22 | 3,83 | 5,71 | 6,90 | 7,02 | 8,10 | 9,12 | 8,69 | 10,25 | 11,49 | 11,71 | 13,42 | 15,13 | 9,45 | 14,94 | 19,28 | 17,57 | 21,22 | 26,99 |
| Heating (E) | kW | 5,80 | 7,55 | 8,86 | 6,58 | 9,79 | 11,78 | 12,04 | 13,87 | 15,54 | 14,92 | 17,55 | 19,64 | 19,39 | 22,12 | 24,79 | 20,86 | 33,52 | 43,6 | 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 | 16,2 | 19,3 | 7,4 | 15,3 | 22,6 | 14,4 | 19,3 | 27,6 |
| Dp Heating (E) | kPa | 4,1 | 6,2 | 7,9 | 5,6 | 10,3 | 13,6 | 13,1 | 16,2 | 19,1 | 11,2 | 14,5 | 17,0 | 10,8 | 13,2 | 15,7 | 3,9 | 9,1 | 14,7 | 8,5 | 12,1 | 18,8 |
| Fan (E) | W | 115 | 154 | 191 | 170 | 230 | 285 | 350 | 420 | 470 | 445 | 550 | 630 | 500 | 617 | 760 | 574 | 778 | 1304 | 1518 | 1758 | 2460 |
| Sound power outlet (E) | dB(A) | 51 | 59 | 64 | 50 | 62 | 67 | 61 | 65 | 69 | 63 | 68 | 70 | 66 | 70 | 73 | 63 | 71 | 77 | 71 | 75 | 81 |
| Sound power inlet + radiated (E) | dB(A) | 52 | 60 | 65 | 51 | 63 | 68 | 62 | 66 | 70 | 64 | 69 | 71 | 67 | 71 | 74 | - | - | - | - | - | - |
| Sound pressure outlet (*) | dB(A) | 42 | 50 | 55 | 41 | 53 | 58 | 52 | 56 | 60 | 54 | 59 | 61 | 57 | 61 | 64 | 54 | 62 | 68 | 62 | 66 | 72 |
| Sound pressure inlet + radiated (*) |) dB(A) | 43 | 51 | 56 | 42 | 54 | 59 | 53 | 57 | 61 | 55 | 60 | 62 | 58 | 62 | 65 | - | - | - | - | - | - |
| Plenum code (E) | | 9 | 0342 | 00 | 9 | 0342 | 00 | 9 | 03422 | 20 | 9 | 03423 | 30 | 9 | 03424 | 40 | 9 | 0342 | 80 | 9 | 03429 | 3 0 |

Units with additional coil -

COOLING (summer mode)

HEATING (winter mode)

Entering air temperature: +27°C d.b. +19°C w.b. Water temperature: + 7°C E.W.T. +12°C L.W.T. Entering air temperature: +20°C Water temperature: +70°C E.W.T. +60°C L.W.T.

| MODEL MTO | | 1 | 4+ | 1 | 2 | 24+ | 1 | 3 | 34+ | 1 | 4 | 4+ | 1 | 54 | +1 | (**) | 64 | +2 | (**) | 74 | +2 | (**) |
|--------------------------------------|-------|------|-------|------|------|-------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Speed (E) | | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| Air flow (E) | m³/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) | Ра | 25 | 50 | 75 | 15 | 50 | 80 | 30 | 50 | 70 | 35 | 50 | 67 | 35 | 50 | 70 | 150 | 150 | 150 | 150 | 150 | 150 |
| Cooling total emission (E) | kW | 4,21 | 5,26 | 5,97 | 5,16 | 7,18 | 8,30 | 8,95 | 10,09 | 11,04 | 11,29 | 12,88 | 14,08 | 14,24 | 15,92 | 17,48 | 12,89 | 19,31 | 23,85 | 23,03 | 26,98 | 32,74 |
| Cooling sensible emission (E) | kW | 3,29 | 4,31 | 5,06 | 3,83 | 5,65 | 6,76 | 6,93 | 8,02 | 8,97 | 8,65 | 10,15 | 11,33 | 11,11 | 12,74 | 14,31 | 9,37 | 14,77 | 18,95 | 17,55 | 21,12 | 26,66 |
| 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 | 4,9 | 7,3 | 9,2 | 6,9 | 12,5 | 16,3 | 15,7 | 19,4 | 22,9 | 13,8 | 17,4 | 20,5 | 12,0 | 14,7 | 17,4 | 7,3 | 15,0 | 22,0 | 14,4 | 19,1 | 27,1 |
| 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 | 155 | 185 | 170 | 225 | 275 | 345 | 415 | 460 | 440 | 540 | 615 | 495 | 610 | 750 | 565 | 750 | 1327 | 1499 | 1727 | 2376 |
| Sound power outlet (E) | dB(A) | 51 | 59 | 64 | 50 | 62 | 67 | 61 | 65 | 69 | 63 | 68 | 70 | 66 | 70 | 73 | 63 | 71 | 77 | 71 | 75 | 81 |
| Sound power inlet + radiated (E) | dB(A) | 52 | 60 | 65 | 51 | 63 | 68 | 62 | 66 | 70 | 64 | 69 | 71 | 67 | 71 | 74 | - | - | - | - | - | - |
| Sound pressure outlet (*) | dB(A) | 42 | 50 | 55 | 41 | 53 | 58 | 52 | 56 | 60 | 54 | 59 | 61 | 57 | 61 | 64 | 54 | 62 | 68 | 62 | 66 | 72 |
| Sound pressure inlet + radiated (*) | dB(A) | 43 | 51 | 56 | 42 | 54 | 59 | 53 | 57 | 61 | 55 | 60 | 62 | 58 | 62 | 65 | - | - | - | - | - | - |
| Plenum code (E) | | 9 | 0342(| 00 | 9 | 03420 | 00 | 9 | 03422 | 20 | 9 | 03423 | 30 | 90 |)3424 | 10 | 9 | 03428 | 30 | 9 | 03429 | 90 |

(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.

(**) = Models not covered by EUROVENT certification program.

Accessories

| Kit 230V | Main and auxiliary coil valve kit (to be used only with ON/OFF 230 V controls: QCV-MB, WM-T and WM-TQR) 230 V, ON-OFF valve. | |
|-------------|---|--|
| Kit 24V | Main and auxiliary coil valve kit (to be used only with QCV-MB 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). | |
| SFM | G3 synthetic filter The filter is a washable synthetic fibre, flame-proof according to Class F1 DIN 53438. Efficiency of ASHRAE 84%, Eurovent EU3. | |



Accessories

| SFM-F6 | F6 Synthetic Filter (for sizes 6 ÷7 only) High efficiency compact filter in glass microfiber paper, Class F6 according to EN779. | |
|--------|---|--|
| GAV | Antivibrating connection Intake/supply antivibrating connection, made of two galvanized frames and a PVC flexible connection. | |

Electronic controls <u>included</u>

| 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 | |
| SEL-S | Receiving board for centralized control | |

Electronic controls for <u>MB boards</u>

| QCV-MB MB version control board (T-MB wall control included) | |
|--|---|
| PSM-DI | Multifunction control (to be used with QCV-MB control board only) |

—— Sabianet management system for a network of fan coils ———

| Sabianet | Sabianet (to be used with QCV-MB control board only) | |
|-----------------|--|--|
| ROUTER-S | Router for Sabianet | |
| SIOS | Relay output board for Sabianet | |

NOTES: for more details about the Controls, see Page 265.

Maestro-MTO



Crystall Flex System Electronic Filter

The Crystall Flex System is an innovative

filtering system, designed to be easily installed downstream from horizontal concealed fan coils. Created especially for the hotel industry, it can be perfectly added to different structures such as nursing homes and retirement homes and, more generally, wherever a high level of comfort and air quality is needed.

t is made up of 3 elements:

- a) patented electronic plate filter ("Femec" type)
- b) electronic control and power board
- C) high voltage flexible connection cable

The system has been designed to reduce the indoor recirculation of various types of pollutants found in the ducting of air-conditioning systems. As a result, it is ideal for various types of environments, such as schools, hospitals and rest homes (corridors, waiting rooms, wards), doctors' surgeries, hotels and anywhere indoor air quality needs to be improved.

There are many reasons why pollutants can be found in ducts. The main one is the lack of cleaning and maintenance of the ducts, together with other factors such as incorrect equilibrium and/or pressurisation, the circulation of air between different rooms when the system is off, the lack of suitable filters or the air being bypassed around the filtering cells inside the air handling unit, the lack of attention paid when replacing the filters, the presence of favourable conditions in terms of temperature and humidity for the proliferation of bacterial organisms, etc.

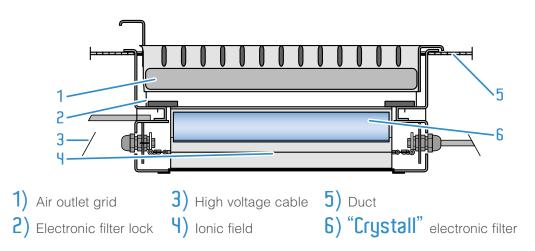
While pollution in ducts can be reduced through periodical maintenance, in reality this is rarely done due to the considerable costs, the difficulty in accessing the systems or the impossibility of shutting down the system for an extended period.

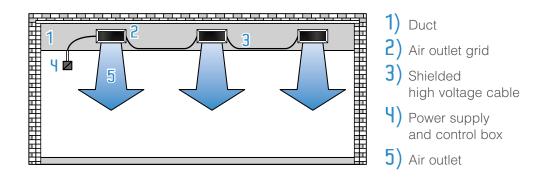
One possible alternative solution that significantly reduces the health risks and drastically cuts the costs of maintenance on ducts involves the installation of active electrostatic filters immediately before the air is introduced into the room.

Electronic filters are known to be very effective in trapping particles, fibres, biological substances, etc., even when these are very small in diameter (less than 1 micron), while only causing a moderate pressure drop in the passing air, both initially (when the filter is clean) and over time when there is dirt on the surfaces.

The bactericide action of electronic filters prevents the proliferation of biological substances (bacteria, mould, yeast, etc.) on the surfaces of the transiting dust, even if these are not trapped by the filter (other "mechanical" filtering systems may, on the other hand, represent a support that is favourable to the proliferation of biological substances).

The **Crystall Flex System** is consequently an effective, reliable and simple product. Furthermore, it has extremely low maintenance costs: it never needs replacing and can be washed and sanitised using ordinary detergents, without any decline in efficiency or product life.





Aduantages of the Crystall Flex System:

- Installation possible on existing systems
- Low impact on the thermal and aeraulic equilibrium of the system
- Reduced pressure drop even when the filter is dirty
- Significant bactericide action on biological pollutants
- No cost for replacing the filters (the filters are totally regenerable by simply washing them)
- Very low additional energy costs
- Simple and fast maintenance
- No system downtime
 - for the maintenance of the filtering units
- Remote power supply that can power multiple filtering units at the same time

Tests and Certification:

The Crystall system has been the subject of numerous trials and efficiency and effectiveness tests to assess the functions and performance of the systems in real conditions.

At the Turin Polytechnic Department of Energy, efficiency and load loss tests were performed using the EN779 international filter classification standards, where applicable.

The University of Ancona carried out over 180 laboratory tests on microbiological substances (total airborne microbiological load), including bacteria, mould, fungi, etc., which confirmed, through the statistical analysis of the data taken from the Fischer test, the effectiveness of the Crystall electronic filter in reducing the bacterial load.

Other tests have been carried out **in the SABIANA laboratories** on the flow-rate, pressure drop, electrical safety and instrumental efficiency of the filtration process on microparticles by numerically counting the most common particle size categories in various rooms. The particles monitored had the diameters specified by the WHO (World Health Organization) and the EPA (Environmental Protection Agency) as being the most harmful to our health (<2.5 micron PM 2.5), with volumetric counts (number/m³) being performed in a common living environment, using a laser particle counter (LPC).

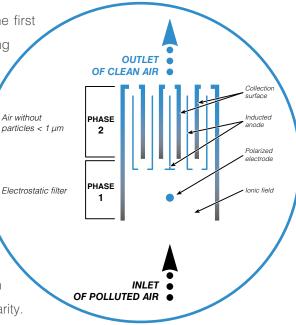


Construction features:

The Crystall electronic filter is made up of two main elements. The first is comprised of an electronic plate filter and is inside a special bearing structure that is designed and shaped based on the type of intended application. The structural element, therefore defines the type of application, allowing its installation downstream of horizontal flushmounted fan coils (PM-CRY). The second element is the supply and control equipment that contains the circuit board and connection terminals.

Active plate electronic filter Femec type

The filter element is made up of two sections: the first is comprised of tungsten electrodes and insulating elements. The second section, meant for capturing polluting particles, is made of paired and suitably shaped special aluminium sheets, making up the collection manifold. This section can be easily removed for effortless maintenance. The filter's operating principle is extremely simple. Pollutants cross the first section made up of electrodes and electronically charged by the electrical field produced (ionization). The particles are then collected on the filter plates that are in opposite polarity. Due to the high voltage inside the filter an intense and



disparate electrical field is generated with an avalanche effect called a "corona discharge".

Electronics board

This mainly contains the filter circuit board. The equipment is supplied with 230V and is capable of generating a high voltage but low intensity current (max 3 mA) needed to produce the ionizing field. A single unit can supply several terminals based on the total filter surface used. The equipment is supplied with a remotable alarm status contact and, locally, with a failure indicator light.

Connection cable

It is made up of a special AWG-22 wire with external insulation suitable for high voltage use.

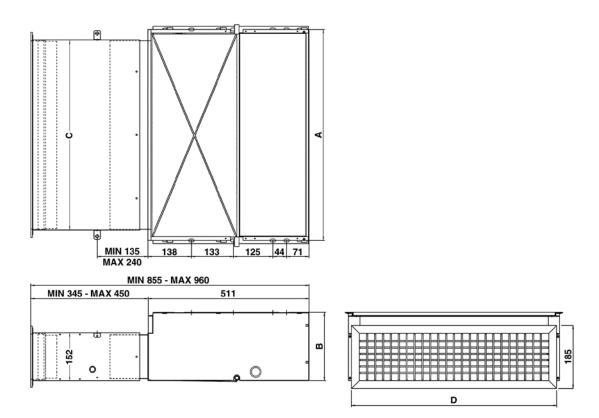
Dimensions

This type of equipment was specifically created to be able to be inserted downstream of Sabiana Carisma CRC (ID model) horizontal concealed fan coils and Sabiana Carisma CRSO ducted fan coils.

By adapting the duct and/or the outlet grid, it can also be installed downstream of existing fan coils.

The structure is made of galvanised plate and is comprised of:

- an adjustable length of duct work;
- a Femec type electrostatic filter;
- an electronic filter control unit that can be installed on the side of the duct work or on the side of the fan coil;
- an aluminium outlet grill with a double row of fins.



| SUITABLE FOR: | | DIMENSIONS | | | | |
|-------------------|------------------------|--------------|------|-----|------|------|
| MODEL | Carisma CRC - IO Model | Carisma CRSO | А | В | С | D |
| | Size | Size | mm | mm | mm | mm |
| PM-CRY-2 | 2 | - | 454 | 218 | 400 | 435 |
| PM-CRY-3-4 | 3 - 4 | 1 | 669 | 218 | 600 | 635 |
| PM-CRY-5-6 | 5 - 6 | - | 884 | 218 | 800 | 835 |
| PM-CRY-4S | - | 2 | 884 | 248 | 800 | 835 |
| PM-CRY-7 | 7 | - | 1099 | 218 | 1000 | 1035 |
| PM-CRY-8-9 | 8 - 9 | 3 | 1099 | 248 | 1000 | 1035 |



Accessories



<u>Wall</u> electronic controls

| FUNCTIONS | IDENTIFICATION | | |
|---|----------------|-------|--|
| | WM-TQR | WM-AU | |
| 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) | | | |
| Installation of electronic low temperature cut-out thermostat (TME) | | | |

WM-TQR









Carisma Floor CCP–ECM Trench Convector

Cooling and Heating

Carisma Floor CCP–ECM trench convectors represent a combination of innovative aesthetics and functionality in an air conditioning system. They are designed to **efficiently heat, cool** and **uentilate**

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 priuate homes, on uerandas, in public offices and buildings and in exhibition and commercial areas.

Technical characteristics of the main components:

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.

COII 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 ambient side, with connection nut (int. thread ³/₄") and air venting.

Tangential fan. 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 of cover grid.

Mounting couer with a **protective profile** of the perimeter listels to protect the fan coils during installation.





Construction features CCP-ECM 2T version

Standard uersions

2 Widths: 310 and 360 mm. 2 Heights: 130 and 155 mm. 3 Lengths: 1250, 2000 and 2750 mm. Aluminium roll-up grid.

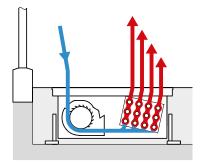
Identifications and Models

| | DIMENSIONS | | |
|---------------|----------------------|---------------|-------------------------|
| Casing Length | Casing Height | Casing Width | MODEL |
| L (mm) | H (mm) | T (mm) | WODEL |
| | 130 | 310 | CCP-ECM 2T 1250-130-310 |
| 1250 | 130 | 360 | CCP-ECM 2T 1250-130-360 |
| 1250 | 155 | 310 | CCP-ECM 2T 1250-155-310 |
| | 155 - | 360 | CCP-ECM 2T 1250-155-360 |
| | 130 - | 310 | CCP-ECM 2T 2000-130-310 |
| 2000 | | 360 | CCP-ECM 2T 2000-130-360 |
| 2000 | 155 - | 310 | CCP-ECM 2T 2000-155-310 |
| | | 360 | CCP-ECM 2T 2000-155-360 |
| | 130 | 310 | CCP-ECM 2T 2750-130-310 |
| 2750 | 130 | 360 | CCP-ECM 2T 2750-130-360 |
| 2130 | 155 — | 310 | CCP-ECM 2T 2750-155-310 |
| | | 360 | CCP-ECM 2T 2750-155-360 |

Operating principle

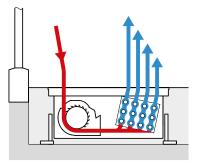
Forced heating convection

The cold air which skims the windows is suctioned and heated by the coil. The heated air rises, creating a shield to cold air.



Forced cooling convection

Installation in front of the window surfaces efficiently contrasts the diffusion of heat due to solar radiation.





Construction features CCP-ECM 4T version

Standard uersions

2 Widths: 330 and 360 mm. 2 Heights: 130 and 155 mm. 3 Lengths: 1250, 2000 and 2750 mm. Aluminium roll-up grid.

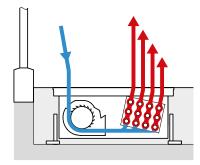
Identifications and Models

| | DIMENSIONS | | |
|---------------|---------------|---------------|-------------------------|
| Casing Length | Casing Height | Casing Width | MODEL |
| L (mm) | H (mm) | T (mm) | MODEL |
| | 130 | 330 | CCP-ECM 4T 1250-130-330 |
| 1250 | 130 | 360 | CCP-ECM 4T 1250-130-360 |
| 1290 | 155 | 330 | CCP-ECM 4T 1250-155-330 |
| | 100 | 360 | CCP-ECM 4T 1250-155-360 |
| | 130 - | 330 | CCP-ECM 4T 2000-130-330 |
| 2000 | | 360 | CCP-ECM 4T 2000-130-360 |
| 2000 | 155 - | 330 | CCP-ECM 4T 2000-155-330 |
| | | 360 | CCP-ECM 4T 2000-155-360 |
| | 130 | 330 | CCP-ECM 4T 2750-130-330 |
| 2750 | 130 | 360 | CCP-ECM 4T 2750-130-360 |
| 2130 | 155 — | 330 | CCP-ECM 4T 2750-155-330 |
| | | 360 | CCP-ECM 4T 2750-155-360 |

Operating principle

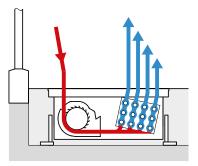
Forced heating convection

The cold air which skims the windows is suctioned and heated by the coil. The heated air rises, creating a shield to cold air.



Forced cooling convection

Installation in front of the window surfaces efficiently contrasts the diffusion of heat due to solar radiation.





Carisma Floor CRP–ECM Trench Convector

For Heating only

Carisma Floor CRP–ECM trench convectors represent a combination of innovative aesthetics and functionality in an heating system. They are designed to efficiently **heat and uentilate** 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 **uerandas**, in public offices and buildings and in exhibition and commercial areas.

Technical characteristics of the main components:

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.



Coll 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 ambient side, with connection nut (int. thread ³/₄") and air venting.

Tangential fan, protective cover, 24V EC motors freely adjustable (0 – 10 V) pre-wired and ready for connection.

<u>Aluminium roll-up grid</u> 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.

<u>Mounting couer</u> with a **<u>protective profile</u>** of the perimeter listels to protect the fan coils during installation.







Construction features CRP-ECM

Standard models

5 Widths: 185, 210, 260, 310 and 360 mm.

1 Height: 110 mm.

12 Lengths: 1250, 1500, 1750, 2000, 2250, 2500, 2750, 3000, 3250, 3500, 3750 and 4000 mm.

Aluminium roll-up grid.

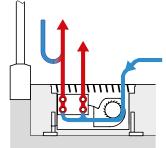
Identifications and Models

| DIMENSION DIMENSION Casing Lenght Casing Height MODEL Casing Lenght Casing Height MODEL L (mm) H (mm) 185 CRP-ECM 1250-110-185 10 CRP-ECM 2750-110-210 1250 260 CRP-ECM 1250-110-210 2750 260 CRP-ECM 2750-110-210 1310 CRP-ECM 1250-110-310 310 CRP-ECM 2750-110-260 310 CRP-ECM 2750-110-260 360 CRP-ECM 1500-110-260 310 CRP-ECM 2750-110-360 310 CRP-ECM 2750-110-360 185 CRP-ECM 1500-110-260 3000 260 CRP-ECM 3000-110-210 3000 260 CRP-ECM 3000-110-210 1500 260 CRP-ECM 1500-110-260 3000 260 CRP-ECM 3000-110-210 310 CRP-ECM 3000-110-210 310 CRP-ECM 1750-110-210 3250 260 CRP-ECM 3250-110-310 360 CRP-ECM 3250-110-310 360 CRP-ECM 1750-110-210 3250 260 CRP-ECM 3250-110-310 360 CRP-ECM 3250-110-310 360 CRP-ECM 2500-110-310 3500 260 <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> | | | | | | |
|--|--------|-----------|----------------------|--------|---------------|----------------------|
| Lenght Height MODEL Lenght Height MODEL L(mm) H (mm) Itempht Lenght Height MODEL 1200 CRP-ECM 1250-110-185 L(mm) H (mm) Itempht Height MODEL 1250 260 CRP-ECM 1250-110-210 2750 260 CRP-ECM 2750-110-260 310 CRP-ECM 1250-110-310 360 CRP-ECM 2750-110-260 310 CRP-ECM 2750-110-260 360 CRP-ECM 1250-110-360 310 CRP-ECM 2750-110-260 310 CRP-ECM 2750-110-260 310 CRP-ECM 1500-110-260 3000 260 CRP-ECM 3000-110-210 360 CRP-ECM 1500-110-360 3000 260 CRP-ECM 3000-110-360 310 CRP-ECM 1750-110-360 360 CRP-ECM 3250-110-210 3250 260 CRP-ECM 3250-110-260 310 CRP-ECM 2000-110-310 360 CRP-ECM 3250-110-310 360 CRP-ECM 3250-110-210 3200 260 CRP-ECM 3250-110-310 360 CRP-ECM 3250-110-210 310 CRP-ECM 3250-110-210 | | DIMENSION | | | [| DIMENSION |
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| 360 CRP-ECM 2250-110-360 360 CRP-ECM 3750-110-360 185 CRP-ECM 2500-110-185 185 CRP-ECM 4000-110-185 210 CRP-ECM 2500-110-210 210 CRP-ECM 4000-110-210 2500 260 CRP-ECM 2500-110-260 4000 260 CRP-ECM 4000-110-260 310 CRP-ECM 2500-110-310 310 CRP-ECM 4000-110-310 310 CRP-ECM 4000-110-310 | 2250 | 260 | CRP-ECM 2250-110-260 | 3750 | 260 | CRP-ECM 3750-110-260 |
| 185 CRP-ECM 2500-110-185 185 CRP-ECM 4000-110-185 210 CRP-ECM 2500-110-210 210 CRP-ECM 4000-110-210 2500 260 CRP-ECM 2500-110-260 4000 260 CRP-ECM 4000-110-260 310 CRP-ECM 2500-110-310 310 CRP-ECM 4000-110-310 310 CRP-ECM 4000-110-310 | | 310 | CRP-ECM 2250-110-310 | | 310 | |
| 210 CRP-ECM 2500-110-210 210 CRP-ECM 4000-110-210 260 CRP-ECM 2500-110-260 4000 260 CRP-ECM 4000-110-260 310 CRP-ECM 2500-110-310 310 CRP-ECM 4000-110-310 | | 360 | CRP-ECM 2250-110-360 | | 360 | CRP-ECM 3750-110-360 |
| 2500 260 CRP-ECM 2500-110-260 4000 260 CRP-ECM 4000-110-260 310 CRP-ECM 2500-110-310 310 CRP-ECM 4000-110-310 | | 185 | CRP-ECM 2500-110-185 | | 185 | CRP-ECM 4000-110-185 |
| 310 CRP-ECM 2500-110-310 310 CRP-ECM 4000-110-310 | | 210 | CRP-ECM 2500-110-210 | 4000 | 210 | CRP-ECM 4000-110-210 |
| | 2500 | 260 | CRP-ECM 2500-110-260 | | 260 | CRP-ECM 4000-110-260 |
| 360 CRP-ECM 2500-110-360 360 CRP-ECM 4000-110-360 | | 310 | CRP-ECM 2500-110-310 | | 310 | CRP-ECM 4000-110-310 |
| | | 360 | CRP-ECM 2500-110-360 | | 360 | CRP-ECM 4000-110-360 |

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.







| VM/VS | Front connections valve kit Consisting of: • Lower valve body with kV factory preset: – DN 15 external thread with euroconus ¾" – M30 x 1,5 – Galvanised, protective cap. • Adjustable return lockshield: – DN 15 external thread with euroconus ¾" – Galvanised. | |
|---------|--|-------------------------------|
| V/VS | Side connection valve kit Consisting of: • Lower valve body with kV factory preset: - DN 15 external thread with euroconus ¾" - M30 x 1,5 - Galvanised, protective cap. • Adjustable return lockshield: - DN 15 external thread with euroconus ¾" - Galvanised. | |
| ATT-24V | Thermoelectric actuator Power supply: 24 V DC. Control signal: 0-10V DC. Absorption: 2 W. Absorbed current: 80 mA. Max inrush current: 350 mA (max. 2 min). Protection rating: IP 54. Adjustment stroke: 4 mm. Including VA80 valve adaptor and 5m connection cable. Normally closed in absence of current. | |
| CVSG | Empty casing The range and minimum and special lengths of the casings vary for the different models. Dimensions: • Heights: 130, 155 mm • Widths: 310, 330, 360 mm • Variable lengths: 200-3000 mm Material: galvanised steel painted Anthracite grey (RAL 7016 opaque) with natural anodised aluminium casing. | |
| TS1 | Casing sound absorbtion lining 4 mm sound absorbtion lining installed in the factory on the outer surface of the casing. | Insulation against noise 4 mm |
| FVM | Air intake filter Intake filter PPI 30 dark 140 x 3 mm. | |



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 Dimensioni: • 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 Dimensioni: • 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 Dimensioni: • 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. | |



Accessories

| TAD | Digital ambient thermostat Programmable ambient thermostat, including fan control. With large LCD display to control up to6 trench convectors. Energy-saving backlighting. Configurable timing program. Temperature range from 9°C to 32°C. Antifreeze temperature 8°C. Adjustable thermal deviation +/5°C. Heating/cooling control. Power supply via BUS cable. Protection rating/class: IP30 / II Colour similar to RAL 9010. | Manana Manana Manana |
|------------------|--|----------------------------|
| KNX | KNX board To be integrated in a Sabiana control card for KNX network connection. 1 single board necessary for integrated group of trench convectors (up to 6). | |
| STAR | Air temperature sensor NTC 10 K ambient temperature sensor with plastic cap, including 3 m cable + installation material. | |
| STAC-2 Stac-5 | Minimum probe To detect supply temperature, including cable + installation material. | Q |
| LPR | Dew point detector 24 V DC power supply. Max absorbed current 3 mA. Application range: from 10% to 100% R.H. Including cable gland and board connector. | |
| LCF | Contact detector for windows (must be coupled to transmission receiver) Power supply: 13 V lithium battery type CR2032. • Transmission type: X2D protocol. • Transmission frequency 868 MHz. • Signal coverage up to 300 m (in open field). • Protection rating IP 40. | |
| SPR | Presence sensor (must be coupled to transmission receiver) 230 V power supply with phase and neutral. Transmission frequency 868 MHz. 1 - 2 channels depending on function. 3 pre-installed cables to connect switches, ON/OFF buttons. 1 wired phase inlet for detector or button. Up to 16 two-way receivers and an optional number of one-way receivers. Operating temperature: from -5°C to 40°C. | |
| RTR | Transmission receiver For window contact detectors and presence sensors. Power supply by control card. Up to 2x20 recordable emitters. Signal coverage up to 100m (open field). | 61 |



SkyStar SK Cassette Fan Coil Unit with Asynchronous Motor

Innovating and beautiful design, **Seuen 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. n 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 uersion**. 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.

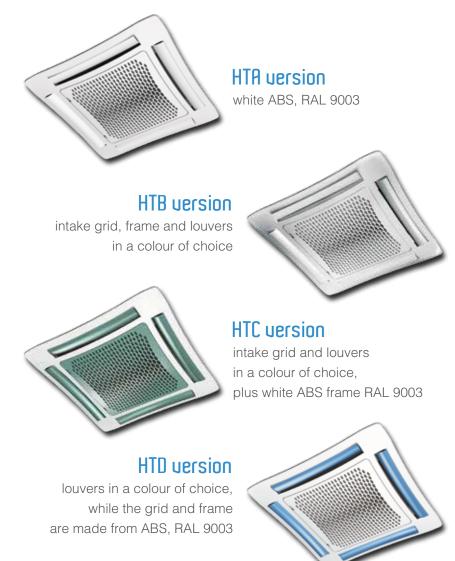
The units can be connected to the most common automatic building management systems.



Technical characteristics of the main components:

<u>Air diffuser:</u> intake grid, frame and

adjustable air distribution louvers on each side, made from ABS.





MD-600 uersion

metal diffuser painted in RAL 9003 white colour with 600x600 dimension to perfectly fit into the false ceiling standard modules without overlapping parts (800x800 model is not available)

Casing: made from galvanized steel with internal thermal insulation with polyolefin (PO) foam (class M1) 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 δ speed electric motor with single phase 230 U / 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.

<u>Coil</u>: 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.

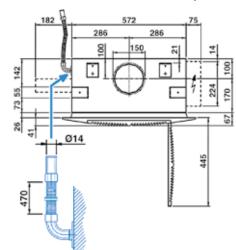
<u>Air filter</u>: synthetic washable filter, easily removable.

<u>Condensate pump</u>: 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.

<u>Ualue set</u>: two or three way valves for ON/OFF operation, with pipe mounting kit and thermostatic actuator.

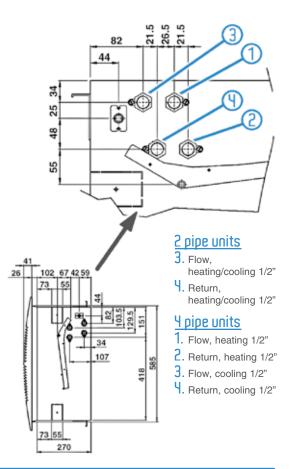
Dimensions and Weight

SK 02-04 / SK 12-14 / SK 22-24-26 / SK 32-34-36 (Uersion 600 x 600)

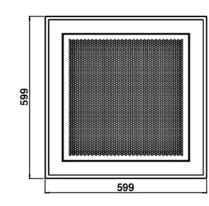


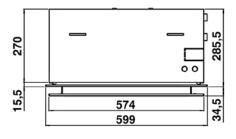
o

o



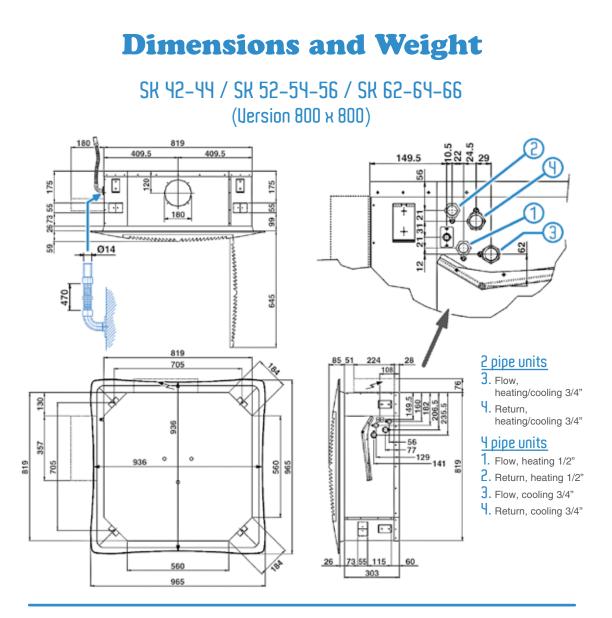
MD-600 metal diffuser



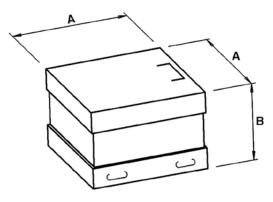


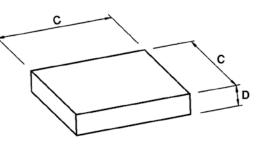
| | Ur | nit | Diff | | | | | |
|-----------------|------------------------|--------------------------|------------------------|--------------------------|--------------------------------|-----|------|-----|
| MODEL | WEIGHTS PACKED UNIT | WEIGHTS UNPACKED UNIT | WEIGHTS PACKED UNIT | WEIGHTS UNPACKED UNIT | PACKED UNIT DIMENSIONS (mm) | | | |
| | kg | kg | kg | kg | А | В | С | D |
| SK 02 - 12 | 28 | 22 | | | | | | |
| SK 04 - 14 | | | C | 3 | 700 | 350 | 75.0 | 150 |
| SK 22 - 24 - 26 | 30 | 24 | 6 | 3 | 790 | 300 | 750 | 150 |
| SK 32 - 34 - 36 | | | | | | | | |





Diffuser





| | Ur | nit | Diff | | | | | |
|-----------------|------------------------|--------------------------|------------------------|--------------------------|--------------------------------|-----|------|-----|
| MODEL | WEIGHTS PACKED UNIT | WEIGHTS UNPACKED UNIT | WEIGHTS PACKED UNIT | WEIGHTS UNPACKED UNIT | PACKED UNIT T DIMENSIONS (m | | | |
| | kg | kg | kg | kg | А | В | С | D |
| SK 42 | 44 | 36 | | | | | | |
| SK 44 | | | 10 | 6 | 1050 | 400 | 1000 | 200 |
| SK 52 - 54 - 56 | 47 | 39 | 10 | 0 | 1050 | 400 | 1000 | 200 |
| SK 62 - 64 - 66 | | | | | | | | |

SkyStar 9





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

<u>COOLING</u> (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. |

<u>HEATING</u> (winter mode) Entering air temperature: +20°C Entering water temperature: +50°C

Water flow rate as for the cooling conditions

| MODEL | | | SK 02 | | SK 12 | | | SK 22 | | | SK 32 | | |
|-------------------------------|-------|------|-------|------|-------|------|----------|----------|------|------|-------|------|-------|
| Speed | | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| Air flow | m³/h | 310 | 420 | 610 | 310 | 420 | 520 | 320 | 500 | 710 | 430 | 610 | 880 |
| Cooling total emission (E) | kW | 1,27 | 1,63 | 1,98 | 1,84 | 2,34 | 2,68 | 2,25 | 3,34 | 4,33 | 2,94 | 3,88 | 5,02 |
| Cooling sensible emission (E) | kW | 1,01 | 1,32 | 1,64 | 1,35 | 1,75 | 2,04 | 1,57 | 2,39 | 3,18 | 2,08 | 2,81 | 3,74 |
| Heating (E) | kW | 1,62 | 2,12 | 2,64 | 2,22 | 2,90 | 3,35 | 2,56 | 3,93 | 5,23 | 3,43 | 4,63 | 6,17 |
| 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 |
| Water flow | l/h | 219 | 280 | 340 | 316 | 402 | 461 | 387 | 574 | 745 | 506 | 667 | 863 |
| Dp Cooling (E) | kPa | 4,5 | 7,0 | 10,0 | 4,9 | 7,6 | 9,7 | 4,6 | 9,4 | 15,1 | 7,5 | 12,4 | 19,7 |
| Dp Heating (E) | kPa | 4,0 | 6,0 | 9,0 | 4,1 | 6,3 | 8,2 | 3,5 | 7,3 | 11,4 | 6,7 | 11,2 | 17,7 |
| 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 |
| | А | 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 | | 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 57 | 75 x 275 | | | | | |

| MODEL | | | SK 42 | 2 | | SK 52 | 2 | SK 62 | | | |
|-------------------------------|-------|------|-------|-------|-------|-------------|-------|-------|-------|-------|--|
| Speed | | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | |
| Air flow | m³/h | 630 | 820 | 1140 | 710 | 970 | 1500 | 710 | 1280 | 1820 | |
| Cooling total emission (E) | kW | 4,21 | 4,91 | 6,16 | 5,31 | 6,78 | 9,51 | 5,31 | 8,45 | 11,10 | |
| Cooling sensible emission (E) | kW | 3,03 | 3,58 | 4,59 | 3,46 | 4,48 | 6,48 | 3,71 | 6,09 | 8,25 | |
| Heating (E) | kW | 5,12 | 6,03 | 7,77 | 5,61 | 7,34 | 10,71 | 6,13 | 10,30 | 14,00 | |
| Heating - Water 70-60°C | kW | 8,61 | 10,16 | 13,14 | 10,25 | 13,43 | 19,76 | 10,25 | 17,26 | 23,68 | |
| Water flow | l/h | 724 | 845 | 1060 | 913 | 1166 | 1636 | 913 | 1453 | 1909 | |
| 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 | 6,7 | 9,9 | 15,1 | 7,9 | 12,4 | 23,0 | 7,9 | 18,6 | 30,6 | |
| 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 | |
| | А | 0,15 | 0,23 | 0,36 | 0,18 | 0,28 | 0,53 | 0,18 | 0,42 | 0,74 | |
| Water content | | 3,0 | 3,0 | 3,0 | 4,0 | 4,0 | 4,0 | 4,0 | 4,0 | 4,0 | |
| Dimensions | mm | | | | 820 |) x 820 x 3 | 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 m³ room and a reverberation time of 0.5 sec.







Certification

| 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. |

<u>HEATING</u> (winter mode) Entering air temperature: +20°C Water temperature: +70°C E.W.T. +60°C L.W.T.

| MODEL | | S | K O | 4 | S | SK 14 | | | SK 24 | | SK 26 | | SK 34 | | | SK 36 | | 6 | |
|-------------------------------|-------|------|------|------|------|-------|------|------|-------|---------|---------|------|-------|------|------|-------|------|------|------|
| Speed | | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| Air flow | m³/h | 310 | 420 | 610 | 310 | 420 | 520 | 320 | 500 | 710 | 320 | 500 | 710 | 430 | 610 | 880 | 430 | 610 | 880 |
| Cooling total emission (E) | kW | 1,51 | 1,96 | 2,33 | 1,85 | 2,36 | 2,70 | 1,85 | 2,65 | 3,34 | 2,09 | 3,06 | 3,93 | 2,36 | 3,02 | 3,81 | 2,72 | 3,53 | 4,53 |
| Cooling sensible emission (E) | kW | 1,15 | 1,55 | 1,90 | 1,34 | 1,71 | 1,98 | 1,34 | 1,98 | 2,56 | 1,49 | 2,24 | 2,95 | 1,75 | 2,29 | 2,97 | 1,97 | 2,62 | 3,46 |
| Water flow | l/h | 260 | 337 | 401 | 318 | 406 | 464 | 318 | 456 | 574 | 359 | 526 | 676 | 406 | 519 | 655 | 468 | 607 | 779 |
| 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 | 1,96 | 2,54 | 3,03 | 2,43 | 3,02 | 3,46 | 2,43 | 3,46 | 4,40 | 1,98 | 2,71 | 3,35 | 3,10 | 3,97 | 4,95 | 2,46 | 3,06 | 3,79 |
| Water flow | l/h | 169 | 219 | 261 | 209 | 260 | 298 | 209 | 298 | 378 | 170 | 233 | 288 | 267 | 341 | 426 | 212 | 263 | 326 |
| Dp Heating (E) | kPa | 6,5 | 10,5 | 14,5 | 5,7 | 8,5 | 10,8 | 5,7 | 10,8 | 16,6 | 3,6 | 6,0 | 9,0 | 8,8 | 13,8 | 20,5 | 5,0 | 7,8 | 11,0 |
| 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 |
| | А | 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 | | 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 | | 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 | | | | | | | | 5 | 75 x 57 | 75 x 27 | '5 | | | | | | | |

| 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 | m³/h | 630 | 820 | 1140 | 710 | 970 | 1500 | 710 | 970 | 1500 | 710 | 1280 | 1820 | 710 | 1280 | 1820 |
| Cooling total emission (E) | kW | 4,14 | 5,03 | 6,34 | 4,52 | 5,66 | 7,71 | 4,99 | 6,33 | 8,77 | 4,52 | 6,93 | 8,89 | 4,99 | 7,84 | 10,20 |
| Cooling sensible emission (E) | kW | 2,96 | 3,65 | 4,69 | 3,25 | 4,15 | 5,83 | 3,53 | 4,55 | 6,49 | 3,25 | 5,18 | 6,84 | 3,53 | 5,73 | 7,68 |
| Water flow | l/h | 712 | 865 | 1090 | 777 | 974 | 1326 | 858 | 1089 | 1508 | 777 | 1192 | 1529 | 858 | 1348 | 1754 |
| 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 | 5,91 | 7,19 | 9,10 | 6,45 | 8,10 | 11,00 | 5,23 | 6,42 | 8,56 | 6,45 | 9,98 | 12,70 | 5,23 | 7,74 | 9,80 |
| Water flow | l/h | 508 | 618 | 783 | 555 | 697 | 946 | 450 | 552 | 736 | 555 | 858 | 1092 | 450 | 666 | 843 |
| Dp Heating (E) | kPa | 9,8 | 14,0 | 21,4 | 11,5 | 17,4 | 29,9 | 6,5 | 9,2 | 15,3 | 11,5 | 25,3 | 38,8 | 6,5 | 13,0 | 19,5 |
| 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 |
| Eap (E) | W | 33 | 48 | 77 | 42 | 63 | 120 | 42 | 63 | 120 | 42 | 95 | 170 | 42 | 95 | 170 |
| Fan (E) | А | 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 | | 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 | | 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 | | | | | | |

(*) = 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.

Other available Versions

| 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 resistance that is controlled in place of the heating battery valve.The electric resistance is controlled in place of the hot water valve and not as integration to it.The resistance is hermetically sealed and supplied inside the battery pipes and therefore can be only factory mounted.The electric resistances of the units are for single phase 230V supply.ModelSK 12-ESK 22-E / SK 32-ESK 42-E / SK 52-E / SK 62-EEmission1500 Watt2500 Watt3000 Watt |
| On are av | with remote electric board request the Skystar cassettes ailable with electric control panel reachable from below and with the electric board n be placed in a remote position. |
| 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. |

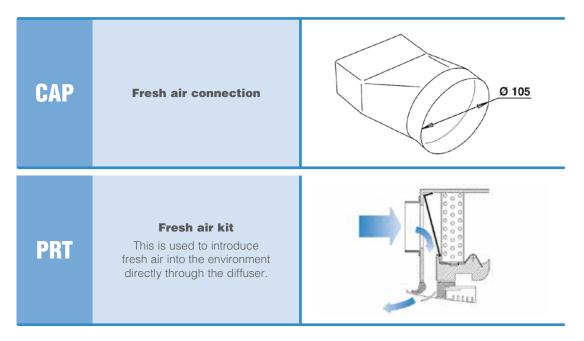


Accessories 3 way ON-OFF valves with micrometric lockshield valve SK 02-04 / 12-14 24-26 / 32-34-36 Valve set, 3 ways, ON-OFF, with thermoelectric actuator. The set includes connection pipes and holders. SK 42-44 / 52-54-56 / 62-64-66 2 way ON-OFF valves with micrometric lockshield valve SK 02-04 / 12-14 / 22-24-26 / 32-34-36 Valve set, 2 ways, ON-OFF, with thermoelectric actuator. 00303-The set includes connection pipes and holders. SK 42-44 / 52-54-56 / 62-64-66 3 way ON-OFF valves with simplified kit SK 02-04 / 12-14 / 22-24-26 / 32-34-36 Valve set, 3 ways, ON-OFF, with thermoelectric actuator. The set includes connection pipes. SK 42-44 / 52-54-56 / 62-64-66 2 way ON-OFF valves with simplified kit SK 02-04 / 12-14 / 22-24-26 / 32-34-36 Valve set, 2 ways, ON-OFF, with thermoelectric actuator. The set includes connection pipes. <u>SK 42-44 / 52-54-56 / 62-64-66</u> **Balancing valves independent** from the system pressure (for main and additional coil) CDA **Air distribution connection**

223

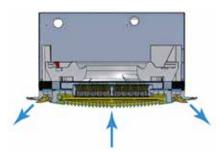
ikuStar¹

Accessories

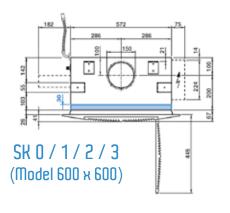


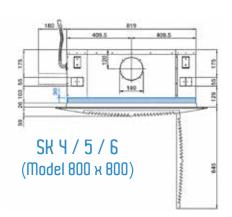
IAQ accessory

SkyStar Cassette can be equipped with the innovative plate type electrostatic filter, **Crystall**, combining air treatment and purifying in a single product. The electronic filter is **patented and certified** according to Standard UNI 11254.



Dimensions







<u>Wall</u> electronic 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-MB | Wall control (to be used with UPM-AU or UP-AU only) |
| TM0-503-SV2 | Automatic speed control with electronic thermostat to be mounted in the DIN 503 box |
| T2T | Electromechanical thermostat with summer/winter switch (only for 2 pipe units) |
| UPM-AU | Power unit for WM-AU and T-MB remote controls, fitted on the unit |
| UP-AU | Power unit for WM-AU and T-MB remote controls, not fitted on the unit |

—— FreeSabiana wireless control system ———

| Free-Com | Remote control to be used with electronic boards described at page 267 |
|----------|--|
| Free-Usm | Power unit fitted on the unit |
| Free-Ups | Power unit not fitted on the unit |
| Free-Sen | Temperature probe |

Electronic controls

—— SK-MB uersion ———

| T-MB | Wall control (to be used with SK-MB version only) |
|----------|--|
| RCS-RT03 | RT03 infra-red remote control with receiver supplied with separate packaging (to be used with SK-MB version only) |
| RT03 | RT03 infra-red remote control supplied with separate packaging (to be used with SK-MB version only) |
| RCS | Receiver for RT03 infra-red remote control supplied with separate packaging (to be used with SK-MB version only) |
| RS | Receiver for RT03 infra-red remote control and MD-600 metal diffuser supplied with separate packaging (to be used with SK-MB version only) |
| PSM-DI | Multifunction control (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 |
| SIOS | Relay output board for Sabianet |



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 contollers (programmable controllers with a 1-10 V output). The extreme efficiency, also at a low speed, makes it possible to greatly reduce 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. he 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 aduantages 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 uersion.

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.

Technical characteristics of the main components:

<u>Air diffuser:</u>

intake grid, frame and adjustable air distribution louvers on each side, made from ABS.





HTR uersion white ABS, RAL 9003

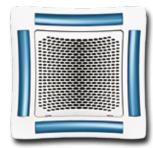


HTB uersion intake grid, frame and louvers in a colour of choice



HTC uersion

intake grid and louvers in a colour of choice, plus white ABS frame RAL 9003



HTD uersion

louvers in a colour of choice, while the grid and frame are made from ABS, RAL 9003



MD-600 uersion

metal diffuser painted in RAL 9003 white colour with 600x600 dimension to perfectly fit into the false ceiling standard modules without overlapping parts (800x800 model is not available)



Casing: made from galvanized steel with internal thermal insulation with polyolefin (PO) foam (class M1) 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 systemg**, 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 U** 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:

high density ABS polystyrene foam condensate tray, shaped in order to optimize the air diffusion, fire retardant rating B1 to DIN 4102.



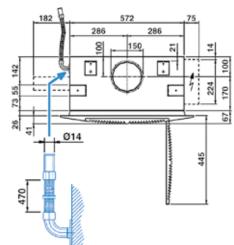
<u>Air filter:</u> synthetic washable filter, easily removable.

<u>Condensate pump</u>: 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.

<u>Ualue set:</u> two or three way valves for ON/OFF operation, with pipe mounting kit and thermostatic actuator.

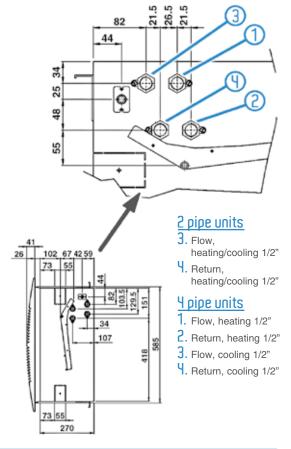
Dimensions and Weight

SK 12-14 / SK 22-26 / SK 32-36 (Uersion 600 x 600)

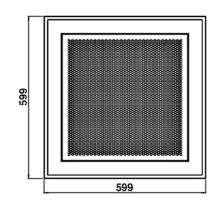


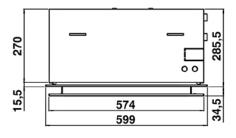
o

o



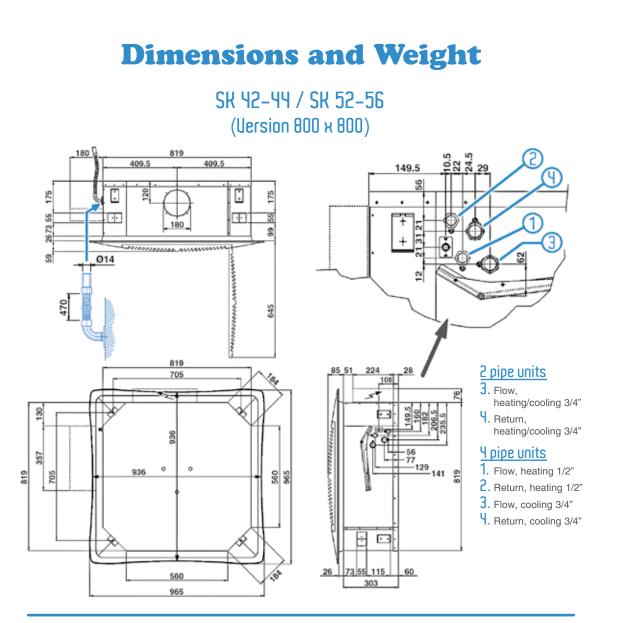
MD-600 metal diffuser



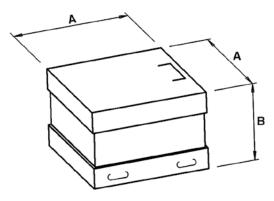


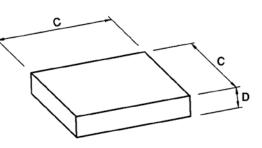
| | Ur | nit | Diff | | | | | |
|------------|------------------------|--------------------------|------------------------|--------------------------|-----|----------------|------|-----|
| MODEL | WEIGHTS PACKED UNIT | WEIGHTS UNPACKED UNIT | WEIGHTS PACKED UNIT | WEIGHTS UNPACKED UNIT | | PACKE MENSI | | |
| | kg | kg | kg | kg | А | В | С | D |
| SK 12 | 28 | 22 | | | | | | |
| SK 14 | | | C | 0 | 700 | 25.0 | 75.0 | 150 |
| SK 22 - 26 | 30 | 24 | 6 | 3 | 790 | 350 | 750 | 150 |
| SK 32 - 36 | | | | | | | | |





Diffuser





| | Ur | nit | Diff | | | | | |
|---------------------|------------------------|--------------------------|------------------------|--------------------------|------|-----|------------------|-----|
| MODEL | WEIGHTS PACKED UNIT | WEIGHTS UNPACKED UNIT | WEIGHTS PACKED UNIT | WEIGHTS UNPACKED UNIT | | | D UNIT ONS (m | |
| | kg | | kg | kg | А | В | С | D |
| SK 42 | 44 | 36 | | | | | | |
| SK 44 SK 52 - 56 | 47 | 39 | 10 | 6 | 1050 | 400 | 1000 | 200 |





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. |

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

| MODEL | | SK- | -ECM | 12 | SK- | -ECM | 22 | SK- | ECN | 32 | SK- | -ECM | 42 | SK- | -ECN | l 5 2 |
|----------------------------------|-------|----------------|------|------|------|------|------|------|------|-------------|------|-------|-----------|------|-------|--------------|
| Inverter Power (V) | | 1 | 5 | 10 | 1 | 5 | 10 | 1 | 5 | 10 | 1 | 5 | 10 | 1 | 5 | 10 |
| Speed | | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| Air flow | m³/h | 310 | 380 | 535 | 310 | 445 | 710 | 360 | 610 | 880 | 630 | 870 | 1165 | 710 | 1130 | 1770 |
| Cooling total emission (E) | kW | 1,84 | 2,17 | 2,75 | 2,24 | 3,05 | 4,33 | 2,56 | 3,87 | 5,02 | 4,21 | 5,15 | 6,33 | 5,29 | 7,72 | 10,75 |
| Cooling sensible emission (E) | kW | 1,35 | 1,61 | 2,09 | 1,57 | 2,17 | 3,18 | 1,81 | 2,81 | 3,74 | 3,03 | 3,77 | 4,72 | 3,69 | 5,53 | 7,94 |
| Heating (E) | kW | 2,22 | 2,67 | 3,44 | 2,55 | 3,58 | 5,24 | 2,96 | 4,63 | 6,2 | 5,11 | 6,35 | 8,01 | 5,89 | 8,83 | 12,73 |
| 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 |
| Water flow | l/h | 317 | 373 | 473 | 385 | 524 | 744 | 441 | 666 | 864 | 723 | 885 | 1089 | 909 | 1328 | 1848 |
| Dp Cooling (E) | kPa | 4,9 | 6,6 | 10,1 | 4,6 | 9,4 | 15,1 | 5,9 | 12,4 | 19,7 | 10,9 | 15,6 | 22,7 | 9,4 | 18,5 | 33,6 |
| Dp Heating (E) | kPa | 4 | 5,5 | 8,7 | 3,6 | 6,6 | 13,1 | 4,7 | 10,5 | 17,7 | 8,7 | 12,8 | 19,5 | 7,2 | 14,9 | 28,8 |
| 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 |
| Fan (E) | W | 5 | 8 | 16 | 5 | 11 | 31 | 7 | 21 | 62 | 10 | 17 | 33 | 10 | 32 | 108 |
| Water content | | 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 27 | | | | 275 | | | | 820 x 8 | | | 320 x 303 | | | |
| Energy classification FCEER (**) | (E) | | Α | | | А | | | А | | A | | | A | | |
| Energy classification FCCOP (*** |) (E) | | Α | | A | | | A | | A | | | А | | | |

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

| COOLING (summer mode) | | HEATING (winter mode) | |
|--------------------------------------|--------------|--|---|
| Entering air temperature: +27°C d.b. | +19°C w.b. | Entering air temperature: +20°C | - |
| Water temperature: + 7°C E.W.T. | +12°C L.W.T. | Water temperature: +70°C E.W.T. +60°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 | | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| Air flow | m³/h | 310 | 380 | 535 | 310 | 445 | 710 | 360 | 610 | 880 | 630 | 870 | 1165 | 710 | 1130 | 1770 |
| Cooling total emission (E) | kW | 1,85 | 2,18 | 2,77 | 2,09 | 2,81 | 3,93 | 2,38 | 3,53 | 4,53 | 4,3 | 5,28 | 6,51 | 4,98 | 7,17 | 9,87 |
| Cooling sensible emission (E) | kW | 1,34 | 1,6 | 2,08 | 1,49 | 2,04 | 2,95 | 1,71 | 2,62 | 3,46 | 3,08 | 3,84 | 4,83 | 3,52 | 5,2 | 7,4 |
| Water flow | l/h | 318 | 375 | 476 | 359 | 483 | 676 | 409 | 608 | 779 | 740 | 908 | 1120 | 856 | 1233 | 1697 |
| Dp Cooling (E) | kPa | 4,6 | 6,2 | 9,5 | 3,5 | 5,7 | 10,5 | 4,1 | 8,4 | 13,1 | 9,4 | 13,6 | 19,8 | 8,8 | 17 | 30,1 |
| Heating (E) | kW | 2,43 | 2,85 | 3,62 | 1,98 | 2,53 | 3,35 | 2,2 | 3,06 | 3,79 | 6,14 | 7,54 | 9,36 | 5,22 | 7,16 | 9,51 |
| Water flow | l/h | 209 | 245 | 311 | 170 | 217 | 288 | 189 | 263 | 326 | 528 | 649 | 805 | 449 | 616 | 818 |
| Dp Heating (E) | kPa | 5,7 | 7,6 | 11,7 | 3,5 | 5,5 | 9 | 4,5 | 7,5 | 11 | 10,5 | 15,5 | 22,5 | 6,5 | 11 | 18 |
| 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 |
| Fan (E) | W | 5 | 8 | 16 | 5 | 11 | 31 | 7 | 21 | 62 | 10 | 17 | 33 | 10 | 32 | 108 |
| Cooling water content | | 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 | | 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 8 | | | 320 x 303 | | | | |
| Energy classification FCEER (**) | (E) | | Α | | Α | | A | | A | | | A | | | | |
| Energy classification FCCOP (***) | (E) | | Α | | | А | | | В | | | А | | | Α | |

(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. (**) FCEER = Energy classification in Cooling.

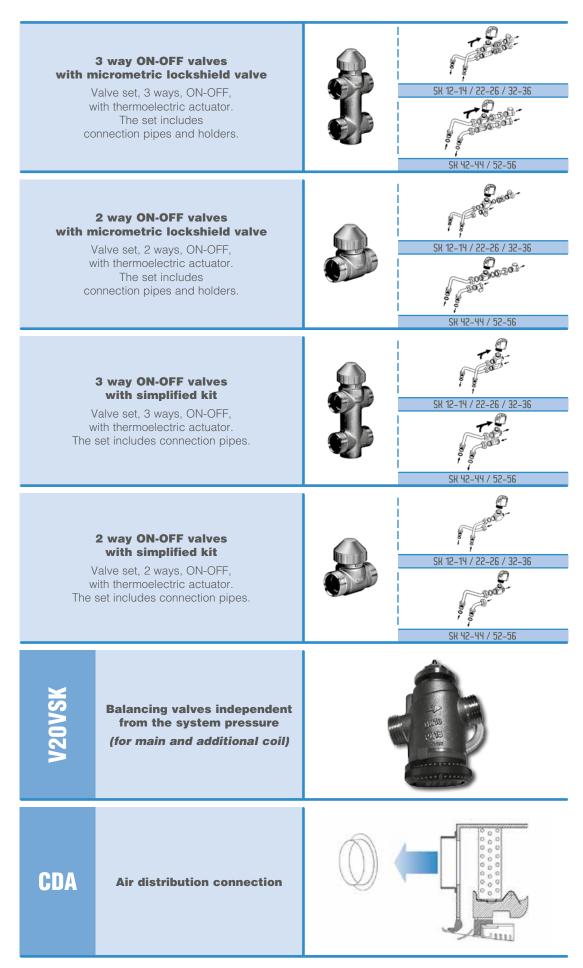
(***) FCCOP = Energy classification in Heating.



Other available Versions

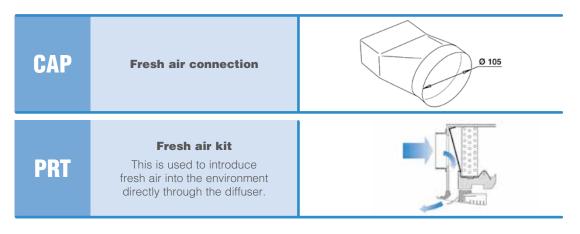
| SK-ECM-MB | All the SkyStar ECM units can be supplied in MB version. This version allows a wide range of controls, including the infra-red remote control, which can manage one single unit or several units by using the Modbus RTU - RS 485 communication protocol. |
|-----------|--|
| SK-ECM-E | The Cassette 2 pipe models are available with electric resistance that is controlled in place of the heating battery valve.The electric resistance is controlled in place of the hot water valve and not as integration to it.The resistance is hermetically sealed and supplied inside the battery pipes and therefore can be only factory mounted.The electric resistances of the units are for single phase 230V supply.ECM ModelSK 12-ESK 22-E / SK 32-ESK 42-E / SK 52-EEmission1500 Watt3000 Watt |
| МСТ | 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. |
| | |

Accessories





Accessories



<u>Wall</u> electronic 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-MB | Wall control (to be used with UPM-AU or UP-AU only) |
| WM-S-ECM | Continuous fan speed control with electronic thermostat, summer/winter switch and liquid crystal display |
| UPM-AU | Power unit for WM-AU and T-MB remote controls, fitted on the unit |
| UP-AU | Power unit for WM-AU and T-MB remote controls, not fitted on the unit |

Electronic controls

- SK-ECM-MB uersion -

| T-MB | Wall control (to be used with SK-ECM-MB version only) |
|----------|--|
| RCS-RT03 | RT03 infra-red remote control with receiver supplied with separate packaging (to be used with SK-ECM-MB version only) |
| RT03 | RT03 infra-red remote control supplied with separate packaging (to be used with SK-ECM-MB version only) |
| RCS | Receiver for RT03 infra-red remote control supplied with separate packaging (to be used with SK-ECM-MB version only) |
| RS | Receiver for RT03 infra-red remote control and MD-600 metal diffuser supplied with separate packaging (to be used with SK-ECM-MB version only) |
| PSM-DI | Multifunction control (to be used with SK-ECM-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 |
| SIOS | Relay output board for Sabianet |

NOTES: for more details about the Controls, see Page 265.



Carisma Coanda One Way Cassette Fan Coil Unit with Asynchronous Motor

he **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.

he "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



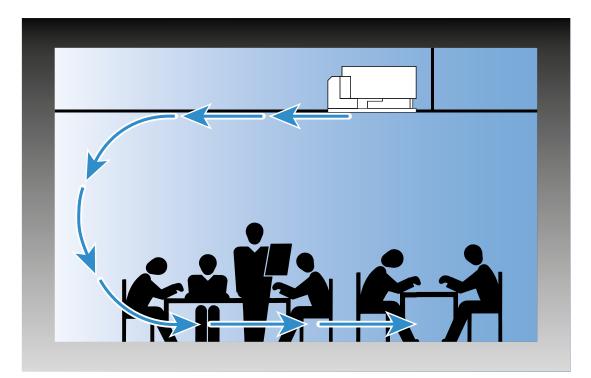


A condensate pump

may also be supplied as an accessory.

n 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).

It is also possible to use the completely **Wireless** electronic control system based on radio communication, called **FreeSabiana**, with great advantages in terms of installation flexibility and maximum precision in measuring room temperature.



sma Loan

Technical characteristics of the main components:

Casing: made from galvanized steel insulated with polyolefin (PO) foam (class M1).

<u>Diffuser</u> 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.

<u>Air filter:</u> 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.**

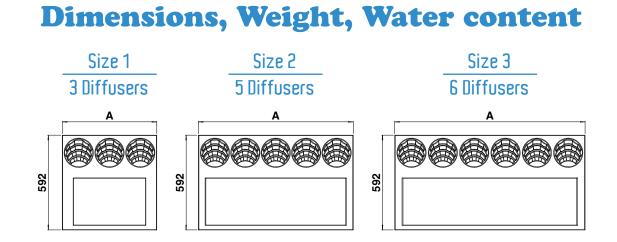
Condensate collection tray: made from plastic with an "L"-shape fitted on the inner casing; the tray is insulated with polyolefin (PO) foam (class M1). The outside diameter of the condensate discharge pipe is 15 mm.

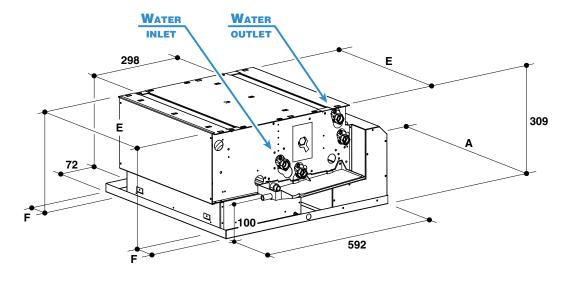
Round diffuser: the units are supplied with round diffusers suitably designed to generate an airflow with "coanda" effect.

The direction of diffuser air flow can be adjusted on site.









| | Dimension (| (mm) |) |
|---|-------------|------|---|
| 4 | | 9 | |

| MODEL | 1 | 2 | 3 |
|-------|-----|------|------|
| Α | 592 | 970 | 1192 |
| E | 454 | 884 | 1099 |
| F | 78 | 43 | 46,5 |
| W | 750 | 1130 | 1350 |

- Weight (kg) ·

| | | WE | IGHT WITH PACKAG | NG | WEIGHT WITHOUT PACKAGING | | | | | | | |
|-----------|-------|----|------------------|----|--------------------------|----|----|--|--|--|--|--|
| N | IODEL | 1 | 2 | 3 | 1 | 2 | 3 | | | | | |
| | 3 | 18 | 34 | 44 | 16 | 33 | 42 | | | | | |
| S | 3+1 | 20 | 40 | 51 | 19 | 38 | 48 | | | | | |
| ROWS | 3+2 | 23 | 46 | 58 | 22 | 43 | 54 | | | | | |
| <u>مح</u> | 4 | 20 | 37 | 48 | 18 | 35 | 45 | | | | | |
| | 4+1 | 23 | 42 | 54 | 21 | 40 | 51 | | | | | |

- Water content (litres) -

| N | NODEL | 1 | 2 | 3 |
|-----|-------|-----|-----|-----|
| | 3 | 0,6 | 1,3 | 1,7 |
| NS | 4 | 0,8 | 1,7 | 2,4 |
| ROV | +1 | 0,2 | 0,4 | 0,5 |
| | +2 | 0,4 | 0,8 | 1,0 |





- Units with 3 and 4 row coil -

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

<u>COOLING</u> (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: +50°C

Water flow rate as for the cooling conditions

| MODEL | | CCN 13 | | | | | CCN 23 | | | | | | CCN 33 | | | | | | |
|-------------------------------|-------|--------------|--------------|------|------|--------------|--------|--------------|--------------|------|--------------|------|--------|--------------|------|--------------|--------------|------|------|
| Crood | | 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 |
| Speed | | MIN | MED | | | MAX | | MIN | MED | | MAX | | | MIN | | MED | MAX | | |
| Air flow | m³/h | 140 | 180 | 220 | 245 | 280 | 305 | 200 | 240 | 305 | 380 | 470 | 560 | 290 | 360 | 440 | 540 | 620 | 680 |
| Cooling total emission (E) | kW | 0,88 | 1,06 | 1,26 | 1,35 | 1,50 | 1,60 | 1,37 | 1,62 | 1,97 | 2,37 | 2,81 | 3,23 | 1,97 | 2,37 | 2,84 | 3,34 | 3,75 | 4,05 |
| Cooling sensible emission (E) | kW | 0,66 | 0,81 | 0,98 | 1,06 | 1,18 | 1,27 | 1,00 | 1,19 | 1,47 | 1,77 | 2,13 | 2,47 | 1,44 | 1,74 | 2,11 | 2,51 | 2,83 | 3,07 |
| Heating (E) | kW | 1,08 | 1,33 | 1,59 | 1,73 | 1,93 | 2,08 | 1,60 | 1,91 | 2,35 | 2,86 | 3,43 | 3,95 | 2,30 | 2,79 | 3,37 | 4,02 | 4,53 | 4,88 |
| 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 | 2,4 | 3,3 | 4,5 | 5,1 | 6,1 | 6,8 | 2,9 | 3,9 | 5,5 | 7,6 | 10,3 | 13,1 | 6,4 | 8,8 | 12,1 | 16,2 | 19,8 | 22,7 |
| Dp Heating (E) | kPa | 1,8 | 2,6 | 3,5 | 4,0 | 4,9 | 5,6 | 2,3 | 3,1 | 4,5 | 6,3 | 8,4 | 10,8 | 5,2 | 7,3 | 9,8 | 13,4 | 16,3 | 18,6 |
| 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 | | | | | | | | | | |
|-------------------------------|-------|---------------|--------------|------|------|--------------|------|--------------|--------------|------|--------------|------|------|------|--------------|------|--------------|--------------|------|
| Crood | | 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 |
| Speed | | MIN | MED | | | MAX | | MIN | MED | | MAX | | | | MIN | | MED | MAX | |
| Air flow | m³/h | 140 | 180 | 220 | 245 | 280 | 305 | 200 | 240 | 305 | 380 | 470 | 560 | 290 | 360 | 440 | 540 | 620 | 680 |
| Cooling total emission (E) | kW | 0,97 | 1,19 | 1,44 | 1,55 | 1,74 | 1,87 | 1,44 | 1,72 | 2,12 | 2,57 | 3,09 | 3,58 | 2,05 | 2,49 | 3,00 | 3,56 | 4,02 | 4,36 |
| Cooling sensible emission (E) | kW | 0,71 | 0,88 | 1,07 | 1,17 | 1,31 | 1,42 | 1,04 | 1,24 | 1,54 | 1,88 | 2,28 | 2,67 | 1,48 | 1,81 | 2,20 | 2,63 | 2,98 | 3,25 |
| Heating (E) | kW | 1,14 | 1,42 | 1,72 | 1,88 | 2,10 | 2,27 | 1,69 | 2,03 | 2,54 | 3,12 | 3,79 | 4,44 | 2,38 | 2,90 | 3,51 | 4,20 | 4,77 | 5,20 |
| 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 | 6,7 | 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 | 7,6 | 8,8 | 10,7 | 12,3 | 3,5 | 4,8 | 7,1 | 10,2 | 13,6 | 17,9 | 3,9 | 5,5 | 7,3 | 10,0 | 12,6 | 14,6 |
| 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 m³ 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)

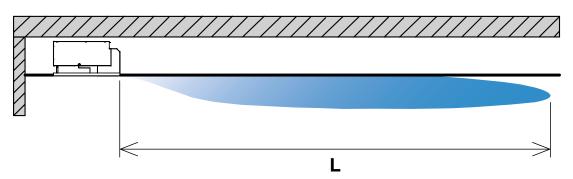
Entering air temperature: +20°C Water temperature: +70°C E.W.T. +60°C L.W.T.

| MODEL | | CCN 13+1 | | | | | CCN 23+1 | | | | | | CCN 33+1 | | | | | | |
|-------------------------------|-------|--------------|--------------|------|------|--------------|----------|-------|--------------|------|--------------|------|----------|-------|------|--------------|--------------|------|------|
| Canad | | 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 |
| Speed | | MIN | MED | | | MAX | | MIN | MED | | MAX | | | MIN | | MED | MAX | | |
| Air flow | m³/h | 140 | 180 | 220 | 245 | 280 | 305 | 200 | 240 | 305 | 380 | 470 | 560 | 290 | 360 | 440 | 540 | 620 | 680 |
| Cooling total emission (E) | kW | 0,88 | 1,06 | 1,26 | 1,35 | 1,50 | 1,60 | 1,37 | 1,62 | 1,97 | 2,37 | 2,81 | 3,23 | 1,97 | 2,37 | 2,84 | 3,34 | 3,75 | 4,05 |
| Cooling sensible emission (E) | kW | 0,66 | 0,81 | 0,98 | 1,06 | 1,18 | 1,27 | 1,00 | 1,19 | 1,47 | 1,77 | 2,13 | 2,47 | 1,44 | 1,74 | 2,11 | 2,51 | 2,83 | 3,07 |
| Heating (E) | kW | 0,92 | 1,08 | 1,25 | 1,34 | 1,47 | 1,56 | 1,49 | 1,71 | 2,02 | 2,35 | 2,73 | 3,07 | 2,12 | 2,47 | 2,87 | 3,30 | 3,64 | 3,89 |
| Dp Cooling (E) | kPa | 2,4 | 3,3 | 4,5 | 5,1 | 6,1 | 6,8 | 2,9 | 3,9 | 5,5 | 7,6 | 10,3 | 13,1 | 6,4 | 8,8 | 12,1 | 16,2 | 19,8 | 22,7 |
| Dp Heating (E) | kPa | 1,6 | 2,1 | 2,7 | 3,1 | 3,6 | 4,0 | 0,9 | 1,2 | 1,6 | 2,0 | 2,6 | 3,2 | 2,0 | 2,6 | 3,4 | 4,3 | 5,1 | 5,8 |
| 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 |

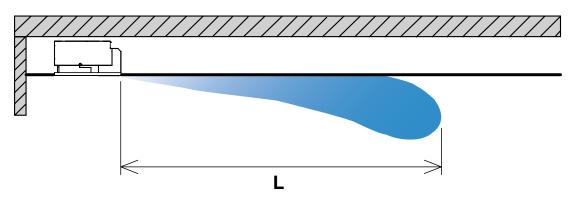
(E) = Eurovent certified performance.
 MIN-MED-MAX = Standard connected speeds.
 (*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m³ room and a reverberation time of 0.5 sec.

Installation Heights and Air throw

C1) Heating



C2) Cooling



| MODEL | | CCN 1 | CCN 2 | CCN 3 |
|--------------|------|-------|-------|-------|
| INSTALLATION | Min. | 2,6 | 2,6 | 2,6 |
| HEIGHT (m) | | 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 |



<u>Wall</u> electronic controls

— Standard 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-MB | Wall control (to be used with UPM-AU or UP-AU only) |
| TM0-503-SV2 | Automatic speed control with electronic thermostat to be mounted in the DIN 503 box |
| T2T | Electromechanical thermostat with summer/winter switch (only for 2 pipe units) |
| UPM-AU | Power unit for WM-AU and T-MB remote controls, fitted on the unit |
| UP-AU | Power unit for WM-AU and T-MB remote controls, not fitted on the unit |

- FreeSabiana wireless control system -

| Free-Com | Remote control to be used with electronic boards described at page 267 |
|----------|--|
| Free-Upm | Power unit fitted on the unit |
| Free-Ups | Power unit not fitted on the unit |
| Free-Sen | Temperature probe |

Electronic controls for <u>MB boards</u>

| MB-M | MB electronic board fitted on the unit |
|---------|--|
| MB-S | MB electronic board supplied with separate packaging |
| T-MB | Wall control (to be used with MB board only) |
| RS-RT03 | RT03 infra-red remote control with receiver supplied with separate packaging (to be used with MB board only) |
| RT03 | RT03 infra-red remote control supplied with separate packaging (to be used with MB board only) |
| RS | Receiver for RT03 infra-red remote control supplied with separate packaging (to be used with MB board only) |
| PSM-DI | Multifunction control (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 |
| SIOS | Relay output board for Sabianet |



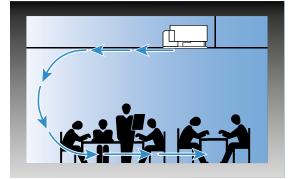
Carisma Coanda–ECM One Way Cassette Fan Coil Unit with EC Brushless Electronic Motor and Inverter Board

he **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.

very 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, **Sauing ouer 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.

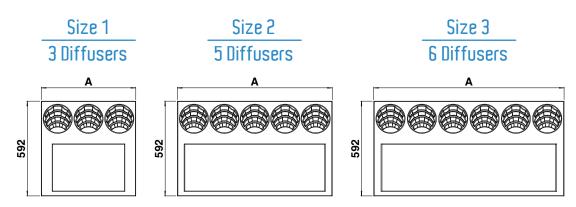
n addition to the conventional temperature and speed control systems, there is also the possibility to **control operation** of each unit through a single remote control with central supervisor software installed on a PC (called Sabianet).



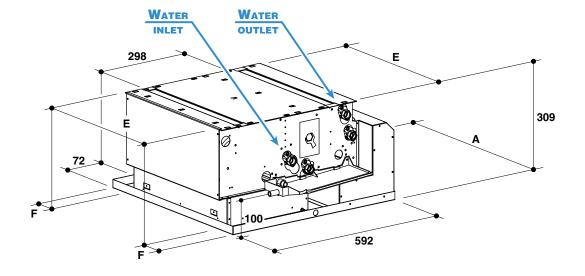
Technical characteristics of the main components:

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 suitching 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 U and frequency of 50 – 60 Hz.



Dimensions, Weight, Water content



| D ' | | / \ |
|------------|---------|------|
| llimo | | (mm) |
| | nsion (| |
| DITICI | | / |
| | | (/ |

| MODEL | 1 | 2 | 3 |
|-------|-----|------|------|
| Α | 592 | 970 | 1192 |
| E | 454 | 884 | 1099 |
| F | 78 | 43 | 46,5 |
| W | 750 | 1130 | 1350 |

- Weight (kg) ·

| | | WE | IGHT WITH PACKAG | ING | WEIGHT WITHOUT PACKAGING | | | | | | |
|------|-------|----|------------------|-----|--------------------------|----|----|--|--|--|--|
| N | IODEL | 1 | 2 | 3 | 1 | 2 | 3 | | | | |
| | 3 | 18 | 34 | 44 | 16 | 33 | 42 | | | | |
| S | 3+1 | 20 | 40 | 51 | 19 | 38 | 48 | | | | |
| ROWS | 3+2 | 23 | 46 | 58 | 22 | 43 | 54 | | | | |
| æ | 4 | 20 | 37 | 48 | 18 | 35 | 45 | | | | |
| | 4+1 | 23 | 42 | 54 | 21 | 40 | 51 | | | | |

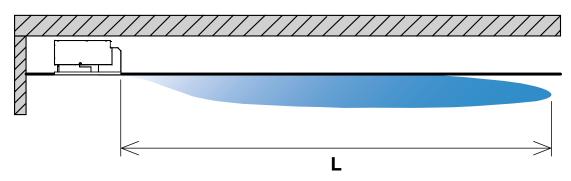
- Water content (litres) -

| N | MODEL 1 | | 2 | 3 |
|-----|---------|-----|-----|-----|
| | 3 | 0,6 | 1,3 | 1,7 |
| NS | 4 | 0,8 | 1,7 | 2,4 |
| ROV | +1 | 0,2 | 0,4 | 0,5 |
| | +2 | 0,4 | 0,8 | 1,0 |

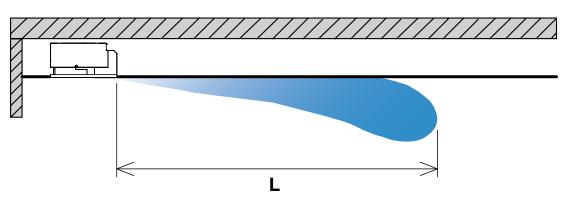


Installation Heights and Air throw

C1) Heating



C2) Cooling



| MODEL | | CCN 1 | CCN 2 | CCN 3 | | | | |
|--------------|------|-------|-------|-------|--|--|--|--|
| INSTALLATION | Min. | 2,6 | 2,6 | 2,6 | | | | |
| HEIGHT (m) | Max. | 3,2 | 3,2 | 3,5 | | | | |

| MODEL | | | | CC | N 1 | | | | | CC | N 2 | | CCN 3 | | | | | | |
|------------------------|----|-----|-----|-----|-----|-----|-----|-----|---|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|
| SPEED | | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 |
| | 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 |
| AIR THROW ∟ (m) | 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 |





- Units with 3 and 4 row coil -

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

<u>COOLING</u> (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:** +50°C Water flow rate as for the cooling conditions

| MODEL | | | CCN | -ECI | VI 1: | 3 | | -ECI | 3 | 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 | m³/h | 130 | 165 | 205 | 250 | 295 | 215 | 295 | 370 | 450 | 540 | 275 | 345 | 430 | 525 | 620 |
| Cooling total emission (E) | kW | 0,82 | 1,00 | 1,18 | 1,37 | 1,56 | 1,46 | 1,92 | 2,31 | 2,74 | 3,16 | 1,87 | 2,31 | 2,78 | 3,28 | 3,75 |
| Cooling sensible emission (E) | kW | 0,62 | 0,76 | 0,91 | 1,07 | 1,24 | 1,07 | 1,42 | 1,73 | 2,07 | 2,41 | 1,37 | 1,70 | 2,06 | 2,45 | 2,83 |
| Heating (E) | kW | 1,02 | 1,25 | 1,50 | 1,75 | 2,02 | 1,72 | 2,28 | 2,79 | 3,33 | 3,85 | 2,19 | 2,72 | 3,30 | 3,93 | 4,54 |
| 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 | 1,7 | 2,4 | 3,3 | 4,3 | 5,3 | 2,6 | 4,2 | 6,0 | 8,0 | 10,4 | 4,7 | 6,9 | 9,4 | 12,9 | 16,6 |
| 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 |
| Energy classification FCEER (**) | (E) | | | C | | | | | В | | | | | В | | |
| Energy classification FCCOP (***) |) (E) | | | C | | | | | В | | | | | В | | |

| MODEL | | (| CCN | -ECI | VI 14 | 4 | | CCN | -ECI | 1 | 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 | m³/h | 130 | 165 | 205 | 250 | 295 | 215 | 295 | 370 | 450 | 540 | 275 | 345 | 430 | 525 | 620 |
| Cooling total emission (E) | kW | 0,91 | 1,12 | 1,34 | 1,58 | 1,81 | 1,55 | 2,06 | 2,51 | 3,00 | 3,50 | 1,95 | 2,42 | 2,94 | 3,49 | 4,02 |
| Cooling sensible emission (E) | kW | 0,66 | 0,82 | 0,99 | 1,18 | 1,38 | 1,11 | 1,49 | 1,84 | 2,21 | 2,60 | 1,41 | 1,76 | 2,15 | 2,57 | 2,98 |
| Heating (E) | kW | 1,07 | 1,32 | 1,60 | 1,90 | 2,20 | 1,82 | 2,46 | 3,03 | 3,68 | 4,32 | 2,25 | 2,82 | 3,44 | 4,12 | 4,78 |
| 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 | 6,6 | 9,0 | 11,6 | 4,1 | 6,7 | 9,4 | 13,2 | 17,1 | 3,5 | 5,2 | 7,4 | 10,0 | 13,0 |
| 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 |
| Energy classification FCEER (**) | (E) | | | C | | | | | В | | | | | В | | |
| Energy classification FCCOP (*** |) (E) | | | C | | | | | В | | | | | В | | |

(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.

(******) **FCEER** = Energy classification in Cooling.

(*******) **FCCOP** = Energy classification in Heating.



Wall electronic controls

— Standard models —

| WM-AU | Automatic speed control with electronic thermostat and summer/winter switch (to be used with UPM-AU or UP-AU only) |
|----------|--|
| T-MB | Wall control (to be used with UPM-AU or UP-AU only) |
| WM-S-ECM | Continuous fan speed control with electronic thermostat, summer/winter switch and liquid crystal display |
| UPM-AU | Power unit for WM-AU and T-MB remote controls, fitted on the unit |
| UP-AU | Power unit for WM-AU and T-MB remote controls, not fitted on the unit |

Electronic controls for <u>MB boards</u>

| MB-ECM-M | MB electronic board fitted on the unit | | | |
|----------|--|--|--|--|
| MB-ECM-S | MB electronic board supplied with separate packaging | | | |
| T-MB | Wall control (to be used with MB board only) | | | |
| RS-RT03 | RT03 infra-red remote control with receiver supplied with separate packaging (to be used with MB board only) | | | |
| RT03 | RT03 infra-red remote control supplied with separate packaging (to be used with MB board only) | | | |
| RS | Receiver for RT03 infra-red remote control supplied with separate packaging (to be used with MB board only) | | | |
| PSM-DI | Multifunction control (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 | | |
| SIOS | Relay output board for Sabianet | | |



Carisma Fly High Wall Fan Coil Unit

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.

Fly is available with standard AC motors

or low energy EC motors and in the following versions: with wired wall control, infra-red remote control, MB electronic board for Modbus management and electric heating coil.

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.

Technical characteristics of the main components:

Uersions: 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:

Casing: made of auto-extinguishing ABS UL94 HB plastic with high specifications and great resistance to aging. The diffusion flap is adjusted manually in CVP model, with remote control in CVP-T model and with T-MB control in CVP-MB model.

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.

<u>Coil</u> 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.

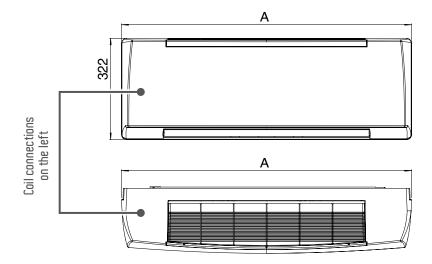
The connections are on the left side facing the unit only.

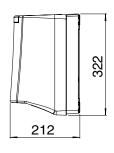
Condensate collection tray: made from polypropylene; the outside diameter of the condensate discharge pipe is 16mm.

Installation template: a cardboard installation template is supplied with every unit to help the mounting on the wall.

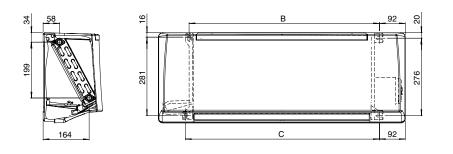
Carisma F

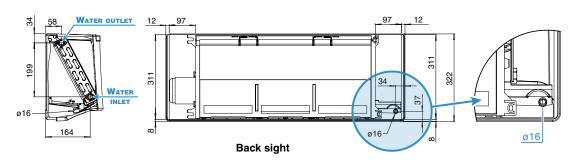
Dimensions, Weight, Water content





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 |







The following standard rating conditions are used:

<u>COOLING</u> (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.

<u>HEATING</u> (winter mode) Entering air temperature: +20°C Entering water temperature: +50°C

Certification

Water flow rate as for the cooling conditions

| 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 | m³/h | 205 | 270 | 340 | 375 | 470 | 500 | 250 | 305 | 365 | 400 | 480 | 545 |
| Cooling total emission (E) | kW | 1,24 | 1,50 | 1,76 | 1,87 | 2,15 | 2,23 | 1,43 | 1,63 | 1,84 | 1,95 | 2,18 | 2,35 |
| Cooling sensible emission (E) | kW | 0,92 | 1,14 | 1,36 | 1,46 | 1,72 | 1,80 | 1,07 | 1,25 | 1,43 | 1,53 | 1,75 | 1,92 |
| Heating (E) | kW | 1,60 | 2,00 | 2,39 | 2,58 | 3,04 | 3,17 | 1,88 | 2,20 | 2,39 | 2,70 | 3,09 | 3,38 |
| Dp Cooling (E) | kPa | 4,8 | 6,8 | 9,0 | 10,1 | 13,0 | 13,9 | 6,2 | 7,9 | 9,8 | 10,9 | 13,3 | 15,2 |
| Dp Heating (E) | kPa | 3,7 | 5,5 | 7,2 | 8,3 | 10,6 | 10,8 | 4,8 | 6,4 | 7,2 | 8,5 | 10,9 | 12,5 |
| 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 | | | | | | | | | | |
|--|-------|-------|--------------|------|--------------|------|------|------|--------------|------|--------------|------|--------------|
| Velocità | | 1 (E) | 2 (E) | 3 | 4 (E) | 5 | 6 | 1 | 2 (E) | 3 | 4 (E) | 5 | 6 (E) |
| VEIUGILA | | MIN | MED | | MAX | | | | MED | | MED | | MAX |
| Portata aria | m³/h | 280 | 375 | 480 | 545 | 730 | 780 | 300 | 440 | 500 | 610 | 675 | 790 |
| Raffreddamento resa totale (E) | kW | 1,89 | 2,32 | 2,78 | 3,03 | 3,63 | 3,78 | 1,99 | 2,62 | 2,86 | 3,26 | 3,46 | 3,81 |
| Raffreddamento resa sensibile (E) | kW | 1,35 | 1,69 | 2,06 | 2,27 | 2,81 | 2,95 | 1,43 | 1,93 | 2,12 | 2,47 | 2,66 | 2,98 |
| Riscaldamento (E) | kW | 2,26 | 2,84 | 3,49 | 3,86 | 4,79 | 5,03 | 2,40 | 3,26 | 3,61 | 4,20 | 4,53 | 5,07 |
| Dp Raffreddamento (E) | kPa | 11,2 | 16,2 | 22,5 | 26,2 | 36,4 | 39,1 | 12,3 | 20,2 | 23,6 | 29,9 | 33,4 | 39,7 |
| Dp Riscaldamento (E) | kPa | 8,7 | 12,6 | 17,7 | 21,2 | 29,3 | 31,9 | 9,7 | 15,9 | 19,1 | 23,7 | 27,2 | 31,5 |
| Assorbimento Motore (E) | W | 16 | 21 | 26 | 29 | 38 | 46 | 17 | 23 | 27 | 32 | 35 | 48 |
| Potenza acustica Lw (E) | dB(A) | 35 | 40 | 45 | 48 | 55 | 57 | 36 | 43 | 46 | 51 | 54 | 57 |
| Pressione acustica Lp (+) | dB(A) | 26 | 31 | 36 | 39 | 46 | 48 | 27 | 34 | 37 | 42 | 45 | 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.

Other available Versions

Fly models with electric heater: 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:

| CUP-E without infra-red remote control and without valve; |
|---|
| CUP-E-2U without infra-red remote control with fitted 2 way valve; |
| CUP-E-3U without infra-red remote control with fitted 3 way valve. |
| CUP-T-E with infra-red remote control and without valve; |
| CUP-T-E-2U with infra-red remote control with fitted 2 way valve; |
| CUP-T-E-3U with infra-red remote control with fitted 3 way valve. |
| CUP-MB-E with MB electronic board and without valve; |
| CUP-MB-E-2U with MB electronic board with fitted 2 way valve; |
| CUP-MB-E-3U with MB electronic board with fitted 3 way valve. |

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.

| MODEL | CVP 1 | CVP 2 | CVP 3 | CVP 4 |
|-------------------------|-----------|-----------|-----------|-----------|
| NOMINAL INSTALLED POWER | 1000 Watt | 1000 Watt | 1500 Watt | 1500 Watt |

Accessories

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Condensate drain pump



Wall electronic controls

------ CUP 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 |
| TM0-503-SV2 | Automatic speed control with electronic thermostat to be mounted in the DIN 503 box |
| T2T | Electromechanical thermostat with summer/winter switch (only for 2 pipe units) |

Electronic controls for <u>MB boards</u>

------ CUP-MB version ------

| T-MB | Wall control (to be used with MB board only) |
|-----------|--|
| RS-RT03-F | RT03 infra-red remote control with receiver supplied with separate packaging (to be used with MB board only) |
| RT03 | RT03 infra-red remote control supplied with separate packaging (to be used with MB board only) |
| RS-F | Receiver for RT03 infra-red remote control supplied with separate packaging (to be used with MB board only) |
| PSM-DI | Multifunction control (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 |
| SIOS | Relay output board for Sabianet |

NOTES: for more details about the Controls, see Page 265.

Carisma -



Carisma Fly–ECM High Wall Fan Coil Unit with EC Brushless Electronic Motor and Inverter Board

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. Fly is **auailable 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 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.

Technical characteristics of the main components:

Uersions: 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:

CUP-ECMwithout infra-red remote control and without valve;CUP-ECM-2Uwithout infra-red remote control with fitted 2 way valve;CUP-ECM-3Uwithout infra-red remote control with fitted 3 way valve.CUP-ECM-Twith infra-red remote control and without valve;CUP-ECM-T-2Uwith infra-red remote control with fitted 2 way valve;CUP-ECM-T-3Uwith infra-red remote control with fitted 3 way valve;CUP-ECM-T-3Uwith infra-red remote control with fitted 3 way valve;CUP-ECM-T-3Uwith MB board and without valve;CUP-ECM-MB-2Uwith MB board with fitted 2 way valve;CUP-ECM-MB-3Uwith MB board with fitted 3 way valve;

Casing: made of auto-extinguishing ABS UL94 HB plastic with high specifications and great resistance to aging. The diffusion flap is adjusted manually in CVP model, with remote control in CVP-T model and with T-MB control in CVP-MB model.

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 U** and frequency of **50 – 60 Hz**.

<u>Coil</u> it is manufactured from drawn copper tube

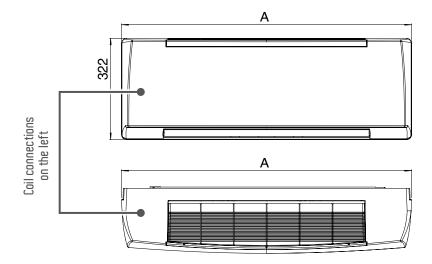
and the aluminium fins are mechanically bonded onto the tube by an expansion process. The coil has two 1/2 inch BSP internal connections and 1/8 inch BSP air vent and drain. The heat exchanger is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.

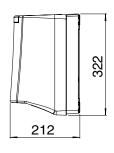
The connections are on the left side facing the unit only.

<u>Condensate collection tray</u>: made from polypropylene; the outside diameter of the condensate discharge pipe is 16mm.

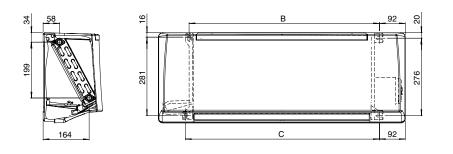
Installation template: a cardboard installation template is supplied with every unit to help the mounting on the wall.

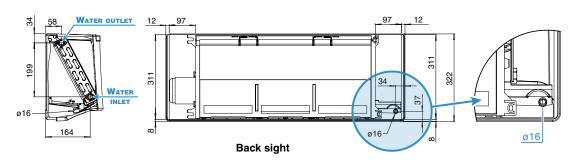
Dimensions, Weight, Water content





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 |







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. |

<u>HEATING</u> (winter mode) Entering air temperature: +20°C Entering water temperature: +50°C

Water flow rate as for the cooling conditions

| MODEL | | | | 1 | | | | | 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 | m³/h | 190 | 240 | 290 | 355 | 415 | 260 | 315 | 375 | 440 | 510 |
| Cooling total emission (E) | kW | 1,17 | 1,39 | 1,58 | 1,81 | 2,00 | 1,47 | 1,67 | 1,87 | 2,07 | 2,26 |
| Cooling sensible emissio (E) | kW | 0,86 | 1,04 | 1,20 | 1,40 | 1,57 | 1,10 | 1,28 | 1,46 | 1,64 | 1,83 |
| Heating (E) | kW | 1,50 | 1,82 | 2,12 | 2,48 | 2,78 | 1,94 | 2,25 | 2,58 | 2,90 | 3,23 |
| Dp Cooling (E) | kPa | 5,0 | 6,3 | 7,7 | 9,5 | 11,2 | 6,9 | 8,4 | 10,1 | 11,8 | 13,7 |
| Dp Heating (E) | kPa | 4,2 | 5,4 | 6,5 | 8,2 | 9,3 | 5,6 | 6,9 | 8,5 | 9,7 | 11,6 |
| Fan (E) | W | 6 | 7 | 9 | 11 | 15 | 7 | 9 | 12 | 16 | 21 |
| Sound power Lw (E) | dB(A) | 35 | 39 | 46 | 48 | 52 | 40 | 44 | 47 | 51 | 55 |
| Sound pressure Lp (*) | dB(A) | 26 | 30 | 37 | 39 | 43 | 31 | 35 | 38 | 42 | 46 |

| MODEL | | | | 3 | | | | | 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 | m³/h | 270 | 345 | 420 | 520 | 620 | 375 | 465 | 550 | 665 | 770 |
| Cooling total emission (E) | kW | 1,83 | 2,20 | 2,53 | 2,93 | 3,29 | 2,34 | 2,72 | 3,05 | 3,43 | 3,75 |
| Cooling sensible emissio (E) | kW | 1,31 | 1,60 | 1,86 | 2,19 | 2,50 | 1,70 | 2,01 | 2,29 | 2,63 | 2,92 |
| Heating (E) | kW | 2,20 | 2,69 | 3,15 | 3,72 | 4,25 | 2,87 | 3,41 | 3,88 | 4,48 | 4,99 |
| Dp Cooling (E) | kPa | 10,7 | 14,8 | 19,0 | 24,8 | 30,4 | 16,5 | 21,6 | 26,6 | 32,9 | 38,7 |
| Dp Heating (E) | kPa | 8,5 | 11,7 | 15,1 | 19,9 | 24,2 | 12,6 | 17,2 | 21,2 | 26,6 | 31,4 |
| Fan (E) | W | 6 | 8 | 11 | 15 | 20 | 9 | 12 | 16 | 22 | 30 |
| Sound power Lw (E) | dB(A) | 37 | 42 | 45 | 49 | 53 | 43 | 46 | 49 | 53 | 57 |
| Sound pressure Lp (+) | dB(A) | 28 | 33 | 36 | 40 | 44 | 34 | 37 | 40 | 44 | 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.

Other available Versions

Fly-ECM models with electric heater: 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:

| CUP-ECM-E without infra-red remote control and without valve; |
|---|
| CUP-ECM-E-2U without infra-red remote control with fitted 2 way valve; |
| CUP-ECM-E-3U without infra-red remote control with fitted 3 way valve. |
| CUP-ECM-T-E with infra-red remote control and without valve; |
| CUP-ECM-T-E-2U with infra-red remote control with fitted 2 way valve; |
| CUP-ECM-T-E-3U with infra-red remote control with fitted 3 way valve. |
| CUP-ECM-MB-E with MB electronic board and without valve; |
| CUP-ECM-MB-E-2U with MB electronic board with fitted 2 way valve; |
| CUP-ECM-MB-E-3U with MB electronic board with fitted 3 way valve. |

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.

| MODEL | CVP-ECM 1 | CVP-ECM 2 | CVP-ECM 3 | CVP-ECM 4 |
|-------------------------|-----------|-----------|-----------|-----------|
| NOMINAL INSTALLED POWER | 1000 Watt | 1000 Watt | 1500 Watt | 1500 Watt |

Accessories

Sway valveControl valve kit:
3 way valve, 230V ON-OFF,
with electric motor and mounting kit
with micrometric lockshield valve.Land
Control valve kit:
2 way valve, ON-OFF,
with electric motor and mounting kit.







Condensate drain pump

Electronic controls for <u>MB boards</u>

——— CUP-ECM-MB version ———

| T-MB | Wall control (to be used with MB board only) |
|-----------|--|
| RS-RT03-F | RT03 infra-red remote control with receiver supplied with separate packaging (to be used with MB board only) |
| RT03 | RT03 infra-red remote control supplied with separate packaging (to be used with MB board only) |
| RS-F | Receiver for RT03 infra-red remote control supplied with separate packaging (to be used with MB board only) |
| PSM-DI | Multifunction control (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 | | | | |
| SIOS | Relay output board for Sabianet | | | | |

NOTES: for more details about the Controls, see Page 267.

Carisma Fly-I

<u>Built-in</u> electronic controls

for Fan Coils with Asynchronous Motor

- for Carisma CRC – CRT – CRR uersions with casing -

| FUNCTIONS |
|--|
| 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) |

CB



CB-T



CB-C



CB-AUT







IDENTIFICATION

| - | | | | | | | | | | |
|---|------|--------------|--|------|--|------------------------|--|---------------|----------|------------|
| 8 | CB-T | CB-C CB-C | | CB-C | | CB-C CB-C CB-AUT | | CB-IAQ | CB-R-IAQ | CB-AUT-IAQ |
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CB-AUT-IAQ



CB-R-IAQ



CB-IAQ



Wall electronic controls

for Fan Coils with Asynchronous Motor

— for all Carisma – SkyStar – Maestro Range —

| FUNCTIONS |
|--|
| 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) |

WM-AU



WM-3V



WM-T



WM-TQR





| | IDENTIFICATION | | | | | | | | | | |
|-------|----------------|--------|-------|-------------|------|-----|--|--|--|--|--|
| WM-3V | T-MW | WM-TQR | WM-AU | TM0-503-SV2 | T-MB | T2T | | | | | |
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Controls

T2T



TMO-503-SV2





NOTE: WM-AU and T-MB controls can be used with UP-AU power unit only.

Controls for Fan Coils with Asynchronous Motor

<u>FreeSabiana</u> wireless control system

for all the Carisma and SkyStar Range



FreeSabiana

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

Temperature probe



his technology prouides 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 room layout and of its furniture and also without mounting it on a wall.

f 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 improued measurement accuracy** is a result of the possibility to position the probe near the user location: this enables to keep the temperature exactly at the required value with energy savings compared with a traditional measurement system.

ransmission is based on communication protocol IEE802.15.9, 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.



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 wall mounted 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.

<u>RT03</u> infra-red remote control and <u>T-MB</u> wall mounted control

for all the Carisma and SkyStar Range ·

All Carisma and SkyStar units can be supplied with a microprocessor management and control unit with **infra-red remote control** with liquid crystal display or with a **T-MB wall mounted control unit** combined with the **MB board**.

T-MB control





Controls for Fan Coil Units

with Asynchronous Motor and with EC Brushless Electronic Motor and Inverter Board

<u>PSM-DI</u> multifunction control panel

for all the Carisma and SkyStar Range

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 unit must have a **MB board**.



PSM-DI panel



<u>Sabianet</u> management system for a network of fan coils

 \cdot for all the Carisma and SkyStar Range \cdot

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.



Sabianet screenshot







Electronic controls for Fan Coil Units

with EC Brushless Electronic Motor and Inverter Board

FUNCTIONS

| 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) |

CB-T-ECM



CB-T-ECM-IAQ







T-MB



WM-S-ECM





IDENTIFICATION Built-in Wall Wall Wall Wall Wall Built-in Representation Built-in <

CB-T-ECM: for **CRC–ECM** and **CRT–ECM** versions.

CB-T-ECM-IAQ: for **CRC-ECM** version.

WM-AU: for **CRC–ECM**, **CRT–ECM**, **CRS–ECM**, **CCN–ECM** and **SK–ECM** versions.

T-MB: for **CRC–ECM**, **CRT–ECM**, **CRS–ECM**, **CCN–ECM** and **SK–ECM** versions.

WM-S-ECM: for **CRC-ECM**, **CRT-ECM**, **CRS-ECM**, **CCN-ECM** and **SK-ECM** versions.

RT03 infra-red remote control,

<u>T-MB</u> wall mounted control,

<u>PSM-DI</u> multifunction control

and <u>Sabianet</u> management system for a network of fan coils

for all the Carisma ECM and SkyStar ECM Range

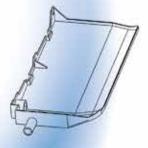
For the characteristics, see Pages 267, 268 and 269.

Accessories for Carisma Fan Coil Units

Il 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.

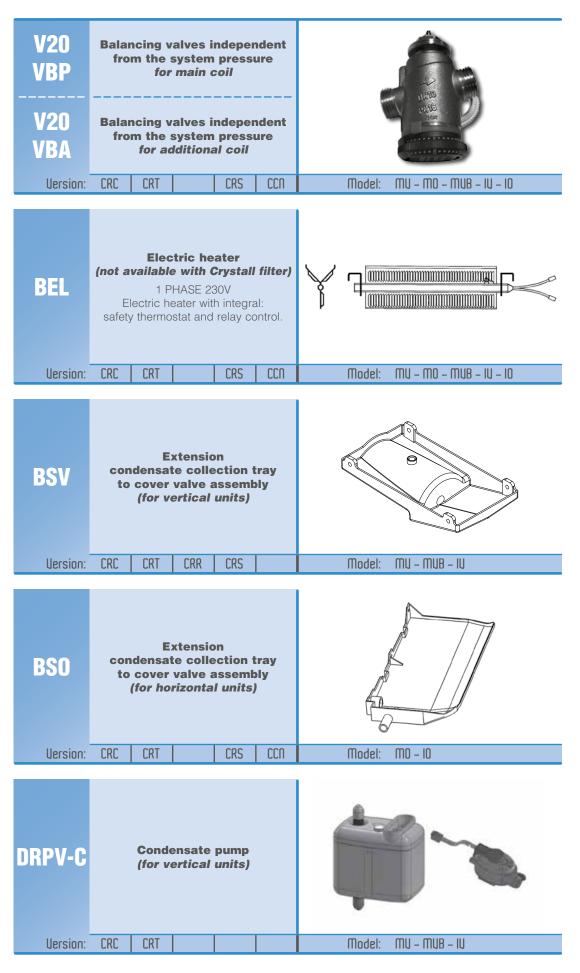






Accessories

| VBP Uersion: | with e | Con 3 way electric n | bil 3 wa trol valve, Ol notor and etric lock | e kit: N-OFF, d mount | ing kit | Model: MU – MO – MUB – IU – IO |
|--|---|--|--|--|------------------------|--------------------------------|
| VBA | with e with | Con 3 way v electric n microme | coil 3 trol valve valve, Ol notor and etric lock | e kit: N-OFF, d mount sshield v | ing kit ralve. | Model: MU - M0 - MUB - IU - I0 |
| Uersion: | CRC | CRT | | CRS | CCN | Model: MU - MO - MUB - IU - IO |
| VS | with e withou | for 3 main a conceal 3 way v lectric m Valve wit ut micron | plified addi led mo valve, (O notor and th flat co netric loc | alve itional del onl N-OFF) d mounti nnectior ckshield | ng kit. n valve. | |
| Uersion: | CRC | CRT | | CRS | CCN | Model: IV – 10 |
| V3M4X2 (mounted) V3S4X2 (not mounted) | f The kit • 2 spo • 2 23 with • insul • exter | or 4 tu and consists ecial 3 w 0 Volt OI internal s ated pip rnal valve | vay valve N-OFF ad safety m | allation coil es ctuators icro swit | n tch ve. | |
| Uersion: | CRC | CRT | | CRS | CCN | Model: MU - MO - MUB - IU - IO |
| V2 | with e | main a Con 2 way v | way val nd addi trol valve valve, Ol notor and | itional e kit: N-OFF, d mounti | ng kit. | |
| Uersion: | CRC | CRT | CRR | CRS | | Model: MU – MO – MUB – IU – IO |

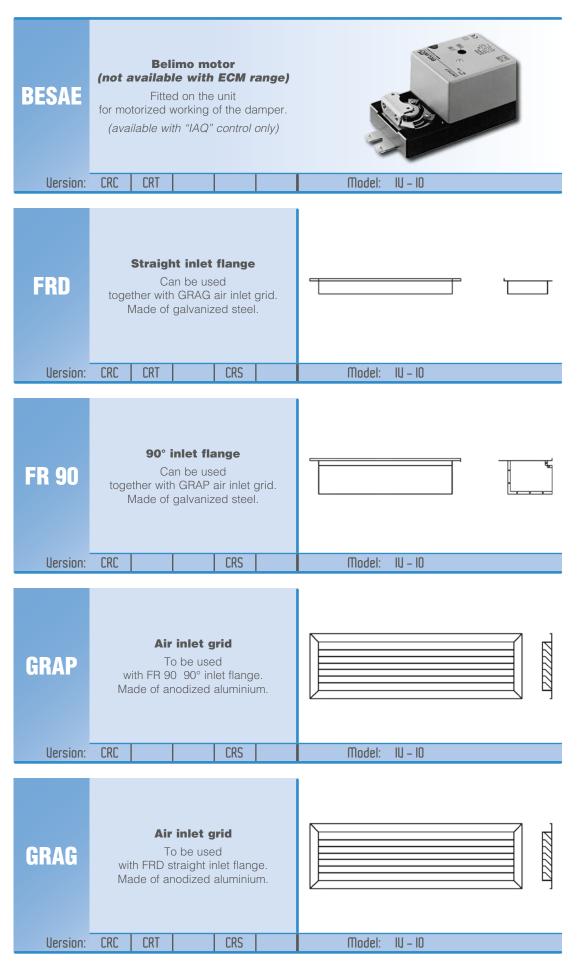




| DRPO-C | (for ho | ensate pum rizontal uni | | |
|----------|--------------------|---|--------------------|----------------|
| Uersion: | CRC CRT | | | Model: MO – 10 |
| SCR | conden: with fa | Plastic sate drain p ist connecti act condensate | ion | |
| Uersion: | CRC CRT | | | Model: MO – 10 |
| SCR | conden: with fa | Plastic sate drain p st connecti act condensate | ion | |
| Uersion: | | CRS | S CCN | Model: MO – 10 |
| PAP | | Feet | | |
| Uersion: | CRC CRT | CRR | | Model: MU |
| GAP | low | luminium intake grid alled with PAP | ⁹ feet. | |
| Uersion: | CRC CRT | | | Model: MU |

| PCV Rear closing panel (for vertical units) Lersion: CR PCO Bottom closing panel for horizontal units) PCO Bottom closing panel for horizontal units) Lersion: CRC CRC | KAF Uersion: | CRC | | al inta n closing r sliding | g panel | | Model: IU - IO |
|---|-----------------|------|-------------------|--|-----------------------|-------|-----------------|
| PCO Bottom closing panel (for horizontal units) Uersion: CRC CRT Musted on the unit with feet and intake grid included. Can be motorized on request. Image: CRC Uersion: CRC CRT Musted on the unit with feet and intake grid included. Can be motorized on request. Image: CRC Musted on the unit with feet and intake grid included. Can be motorized on request. Image: CRC Musted on the unit with feet and intake grid included. Can be motorized on request. Image: CRC Musted on the unit with feet and intake grid included. Can be motorized on request. Image: CRC Musted on the unit with feet and intake grid included. Can be motorized on request. Image: CRC Musted on the unit with feet and intake grid included. Can be motorized on request. Image: CRC Musted On the unit with feet and intake grid included. Can be motorized on request. Image: CRC Musted On the unit with feet and intake grid included. Can be motorized on request. Image: CRC Musted On the unit with feet and intake grid included. Can be motorized on request. Image: CRC Musted On the unit with feet and intake grid included. Can be motorized on request. Image: CRC Musted On the unit with feet and intake grid included. Can be motorized on request. Image: CRC | | | (for vo | | | | |
| Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) Image: room (for horizontal units) | Uersion: | CRC | CRT | | | | Model: MU – MUB |
| SAEM Fresh air mixing damper Mounted on the unit with feet and intake grid included. Can be motorized on request. Uersion: CRC CRC CRT Mounted. SAER | PCO | | | | | | |
| SAEM Mounted on the unit with feet and intake grid included. Can be motorized on request. Uersion: CRC CRT Mounted CRE CRT Model: Mounted CRE CRT Model: Mounted CRE CRT Model: Mounted CRE CRT Model: Mounted CRE Not mounted. Can be motorized on request. | Uersion: | CRC | CRT | | | | Model: MO – MUB |
| SAE Fresh air mixing damper Not mounted. Can be motorized on request. | SAEM | with | Mount feet and | ted on th intake ថ្ | ne unit grid inclu | uded. | |
| SAE Not mounted. Can be motorized on request. | Uersion: | CRC | CRT | | | | Model: MU |
| Uersion: CRC CRT Model: IU – IO | SAE | | No | ot mount | ed. | | |
| | Uersion: | CRC | CRT | | | | Model: IV – IO |





Accessories

| | | | | | | CRC 1÷9 / CRT 1÷7 / CRS 1÷3 |
|----------|---|---------|--|----------|----|---|
| FMD | 9 | Straigh | t outlet | flange | e | |
| | 1 | Made of | galvanize | ed steel | Ι. | |
| | | | | | | only CRS 4 |
| Uersion: | CRC | CRT | | CRS | | Model: IV – IO |
| FM 90 | | Made of | putlet fla galvanize h polyethy | ed stee | | CRC 1÷9 / CRS 1÷3 |
| Uersion: | CRC | | | CRS | | Model: IV – IO |
| 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. | | | | | |
| Uersion: | CRC | CRT | | CRS | | Model: IV – 10 |
| PRC | | Made of | galvanize b polyethy | ed stee | • | All the plenums are supplied with spigots for the connection of flexible ducts. |
| Uersion: | CRC | | | CRS | | Model: IV - IO |
| PMC | Spigot diffuser Made of galvanized steel insulated with polyethylene lining. | | | | | All the plenums are supplied with spigots for the connection of flexible ducts. |
| Uersion: | CRC | | | CRS | | Model: IU – 10 |



| GRAFP Uersion: | Air inlet grid with filter To be fitted to the FR 90 90° inlet flange. Made of anodized aluminium. | | Торияния и портиски и порти И портиски и п | | |
|--------------------------|---|-------------------|---|--|--|
| GRAFG Uersion: | Air inlet grid wi To be fitted to the FRD straight in Made of anodized a | d nlet flange. | Торикана Подел: IV - ID | | |
| PCC Uersion: | Condensate drain pump | | | | |
| FRC Uersion: | Fresh air conn | ection CCN | | | |

Since 1990 Sabiana has been making air handling units, with air flows from 1.000 to 80.000 m³/h. These include standard models, such as the Ocean and Zeus units, modular solutions available in a high number of versions that use standard components and consequently can be delivered with very short lead times, and **CUSTOM** made models for individual customer specifications, using effective configuration and selection software.

Air Handling Units



he latter units, called Vulcan Pro, are made with double panels, 35 and 50 mm thick, and

use special aluminium profiles that ensure the entire inside surface is completely smooth, without angles and protrusions, so as to make cleaning easier and simplify removal of components from the side.

SABIANA

s well as typical solutions that allow greater energy saving, such as static and rotary heat recovery units and inverter-driven motors, Sabiana proposes **electronic filters** as alternatives to traditional mechanical bag filters, featuring a much lower pressure drop and hence low power consumption, and no need for replacement (they can be returned to as-new condition by simple cleaning).

II Air Handling Unit range are compliant with the new **ERP 2015 Regulation (EU) No. 327/2011** which requires **uery low electric consumption ratings** in relation to performances provided.







Énergy Plus Heat Recovery Unit

he **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 recouering 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.

he **Energy Plus** range features **Y 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.

Construction and Maintenance:

External Panels: external galvanised plate sandwich panels, 24 mm thick, filled with 45 kg/m3 of polyurethane foam.

Heat Recourry 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 be obtained 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.

KLINGENBURG Heat Recovery Coil performances are certified by EUROVENT



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.

<u>Air Filters</u> Pleated cell filters, 98 mm thick, efficiency F7 for the intake air process and 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.

<u>Optional variable air flow operation</u> depending on air quality (CO2 and Relative Humidity).

Inspection openings for maintenance, cleaning and filter change. Quick panels removal to access ventilation and heat recovery unit sections.

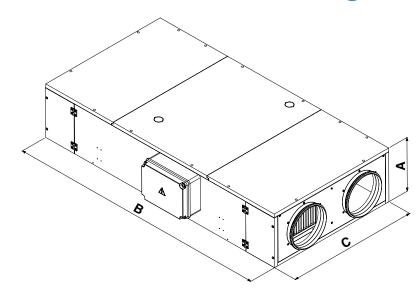
BY-Pass Damper freecooling function.

Floor/ceiling installation. Optional adjustable hanging systems according to the weight of the units.

<u>Optional extra:</u>

- Post heating/cooling water coil.
- plenum connectors for the Sabiana OCEAN sections.
- Rainproof shelter for external installations.

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 | 98 | 140 | 170 | 325 |

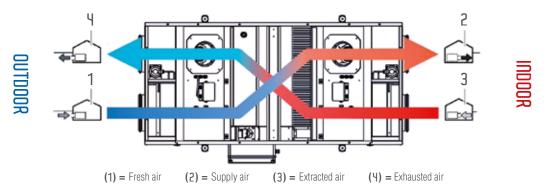


ENERGY PLUS NOMINAL TECHNICAL DATA

| MODEL | | ENY-P1 | ENY-P2 | ENY-P3 | ENY-P4 |
|---|------|--------------|--------------|--------------|--------------|
| Nominal and maximum return/supply air flow | m³/h | 720 | 1150 | 1700 | 2600 |
| Nominal and maximum return/supply an now | m³/s | 0,2 | 0,32 | 0,47 | 0,72 |
| Available pressure | | 170 | 220 | 250 | 250 |
| Minimum air flow m | | 270 | 300 | 600 | 690 |
| Thermal efficiency UE 1253/14 ⁽¹⁾ Regulation | | 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⁾ | | 6,5 | 10,5 | 15,4 | 24,5 |
| Fan number | | 2 | 2 | 2 | 2 |
| Nominal power absorption ⁽³⁾ W | | 332 | 646 | 974 | 1454 |
| Max current input ⁽³⁾ A | | 2,76 | 5,16 | 4,26 | 6,42 |
| 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



Installation

Floor Installation

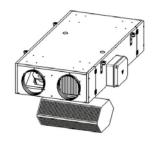
Ceiling Installation

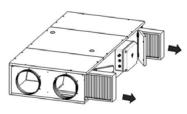


Inspection openings

Heat-exchanger access

Maintenance access



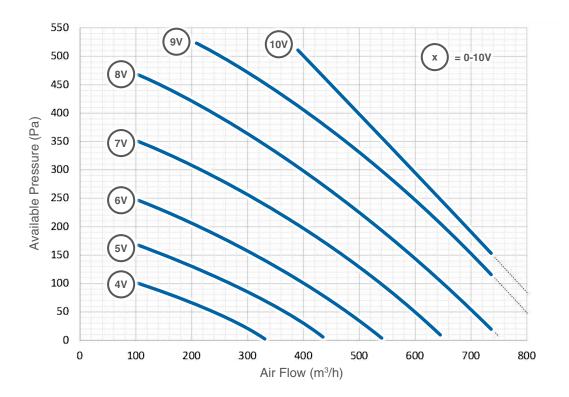


Filter

285

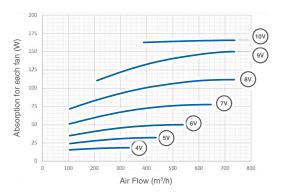
ENY-P1 performance

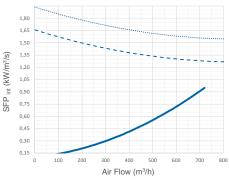




 $\frac{Power absorption}{for each fan^{(1)}}$





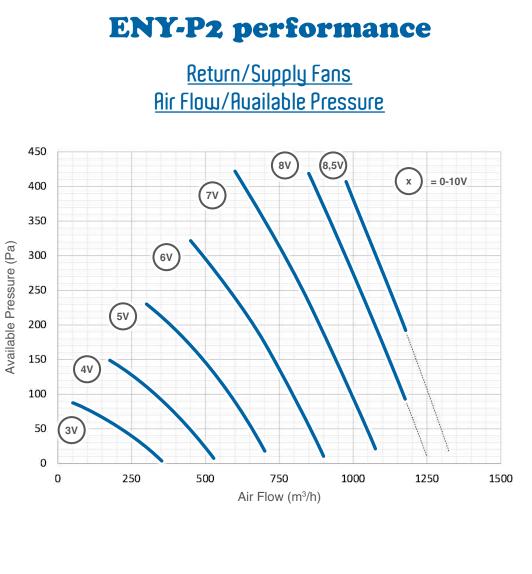


SFP int (kW/m³/s)

SFP _{int_lim} 2018 (kW/m³/s) SFP _{int_lim} 2016 (kW/m³/s)

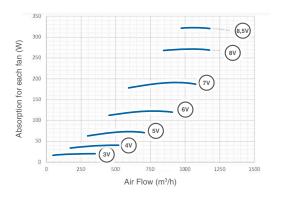
(1) = The power absorption for each fan is useful when fans are working in different conditions.

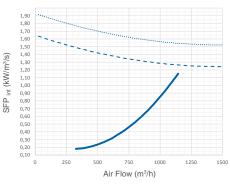




Power absorption for each fan⁽¹⁾





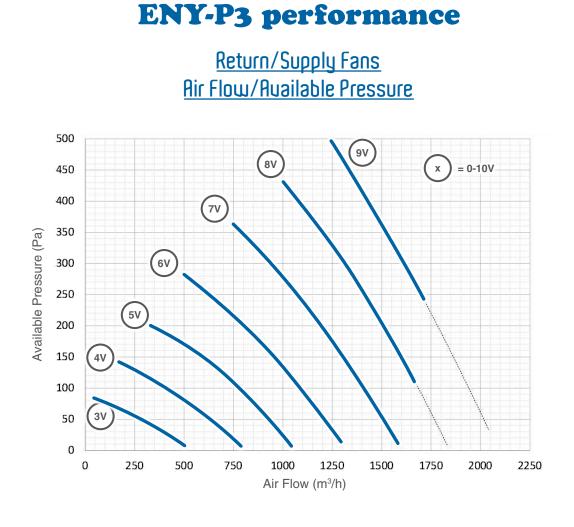


SFP int (W/m³/s)

SFP _{int_lim} 2018 (W/m³/s) SFP _{int_lim} 2016 (W/m³/s)

(1) = The power absorption for each fan is useful when fans are working in different conditions.

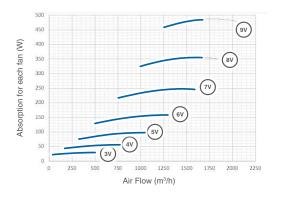
Energy Plus

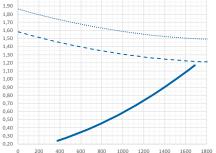


SFP int (W/m³/s)

 $\frac{Power absorption}{for each fan^{(1)}}$







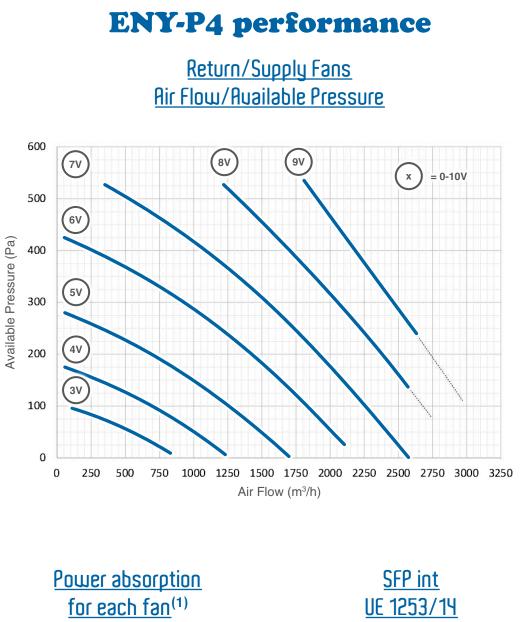
Air Flow (m³/h)

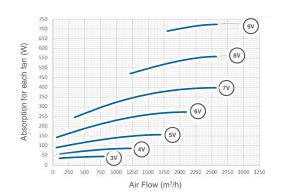
SFP int (kW/m³/s)

SFP _{int_lim} 2018 (kW/m³/s) SFP _{int_lim} 2016 (kW/m³/s)

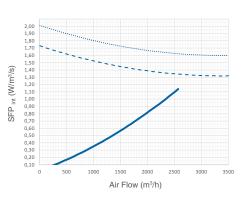
(1) = The power absorption for each fan is useful when fans are working in different conditions.











SFP int (W/m³/s)

SFP int lim 2018 (W/m³/s) int_lim 2016 (W/m3/s) SFP • • • •

(1) = The power absorption for each fan is useful when fans are working in different conditions.

Energy Plus

ENERGY PLUS EFFICIENCY

Supply air conditions: E.A.T.=20°C–R.H.=50%

| | | TAE: +10°C | | | TA | \E: +5 | °C | T | AE: O° | °C | T/ | \E: -5 | °C | TA | E: -10 | °C |
|--------|------|------------|------|----------------|-------|--------|----------------|-------|--------|----------------|-------|--------|----------------|-------|--------|----------------|
| MOD. | Qv | Ph | Et | m _w | Ph | Et | m _w | Ph | Et | m _w | Ph | Et | m _w | Ph | Et | m _w |
| | m³/h | kW | % | kg/h | kW | % | kg/h | kW | % | kg/h | kW | % | kg/h | kW | % | kg/h |
| | 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 |
| ENY-P1 | 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 |
| ENT-FT | 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 |
| | 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 |
| ENY-P2 | 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 |
| | 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 |
| ENY-P3 | 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 |
| | 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 |
| ENY-P4 | 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.

 $\mathbf{Q}_{\mathbf{v}}$ = Supply air flow rate.

Q_r = Fresh air.

 $\mathbf{P}_{\mathbf{h}}$ = Heat power recovered by supply air.

 ϵ_t = Heat recovery efficiency with balanced air flow rates.

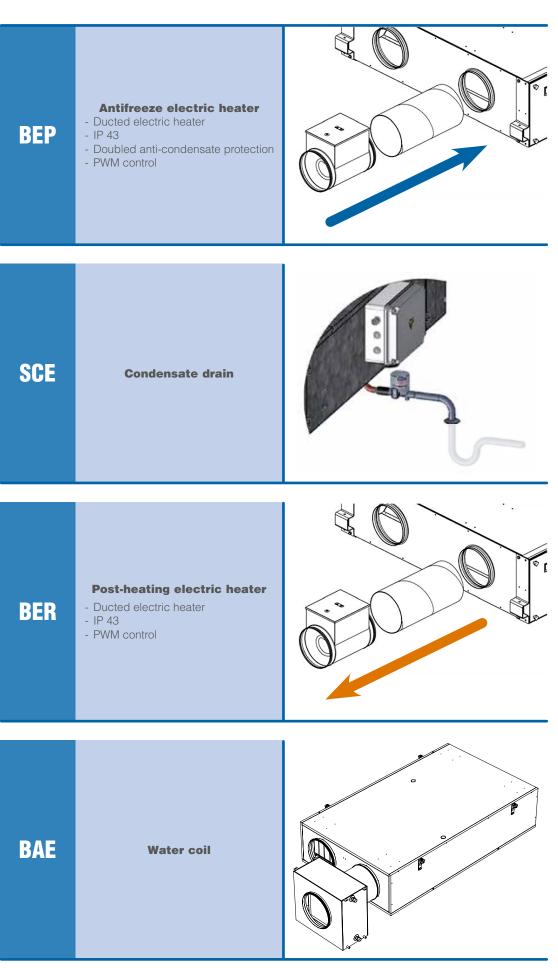
 $\mathbf{m}_{\mathbf{w}}$ = Condensate generation.

FORMULAS:

$$\mathcal{E}_{t} = \frac{2980 P_{h}}{Q_{v}(t_{i} - TAE)}$$

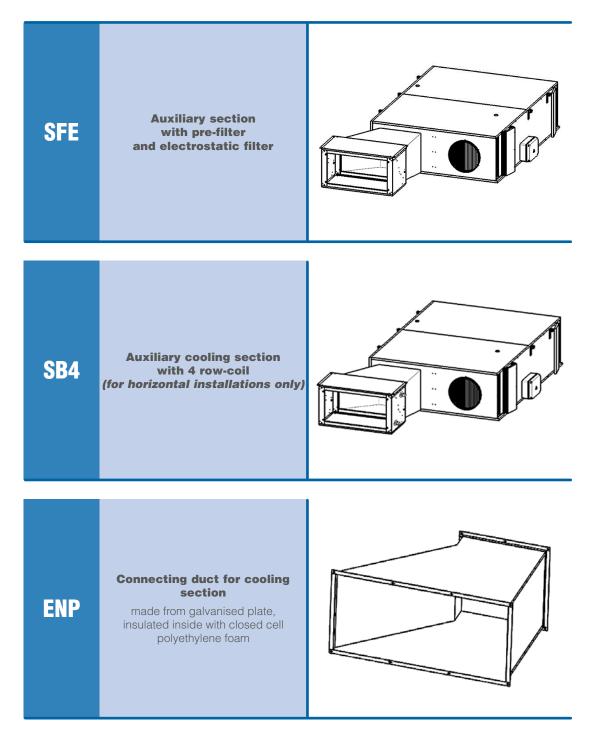


Accessories



Energy Plus

Accessories





Controls

Display

- Nominal speed setting fan supplyNominal speed setting fan discharge
- Time setting
- Parameters of operationControl fan speed mode
- Manual setting

T-EP

- Weekly program
 Automatic setting (in case of connection with a CO₂-RH external sensor)
- Post heating/cooling setting modeVisualization of the operative
 - parameters





Ocean Modular Ducted Unit

he **Ocean** modular ducted units are suitable for heating and cooling small and medium-sized environments. The compact dimensions of the unit and the modularity of the basic components simplify installation in small spaces. **Four basic models and 15 uersions** are available, both horizontal and vertical, with air flow-rates ranging from 600 to 5.300 m³/h, heat outputs **from 6 to 68 kW**, cooling capacities **from 3 to 30 kW**.

Rs well as the traditional accessories, each unit can be supplied with **the innouatiue Crystall electronic filter**

that significantly improves indoor air quality.

Technical characteristics of the main components:

Casing: consists of self-supporting panels in hot dip galvanized, prepainted steel, which are completely insulated with a 20 mm. thick, thermoacustic, flame retardant lining.

Fan section with Asynchronous

Electric Motor: for the models 1, 2 and 3, it consists of centrifugal fans in galvanized steel with two impellers, and one directly coupled three speed motor. Model 4 consists of two motors with rotating stators directly coupled to the impeller. The power supply is permanent split capacitor **Single phase 230U – 50Hz**, insulation class F.

Fan Section with EC Motor and Inverter (Ocean-ECM range): it consists of centrifugal fan with two impellers, made of galvanized steel and **one single EC** motor directly coupled to the power supply single phase 230V - 50Hz, control input 0–10U.

<u>Coil</u> is mounted in a galvanized steel carrying frame and constructed in 3/8" dia expanded copper tubes with aluminium fins with a pitch of 2,1 mm.

The steel headers have tapping for air vent and male connectios.

The coils are tested to a pressure of 30 bars.

In normal operation the water temperature should not exceed 95°C

and the maximum working pressure 10 bars. Where a cooling coil is fitted the coil should always be fitted in a vertical position.

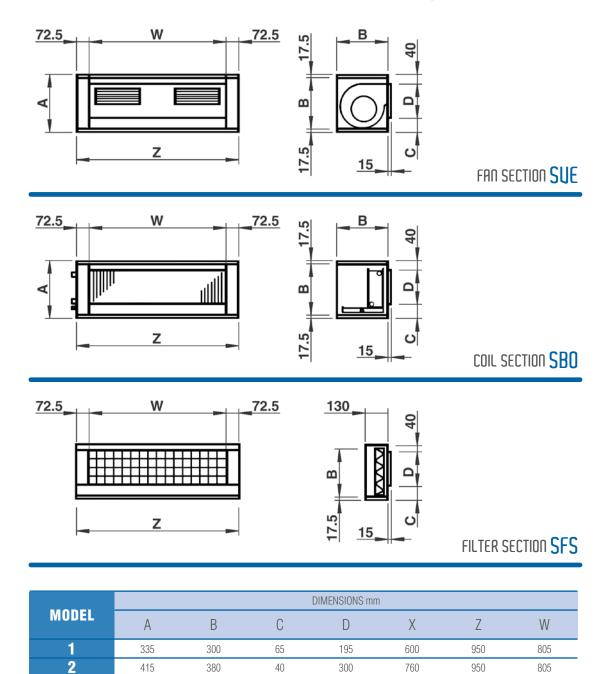
The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.

Filter: available in the following versions:

- regenerable synthetic filter, 50 mm thick, **63** efficiency class.
- Synthetic micro-pleated cell filter, 98 mm, F? efficiency class.



Dimensions and Weight

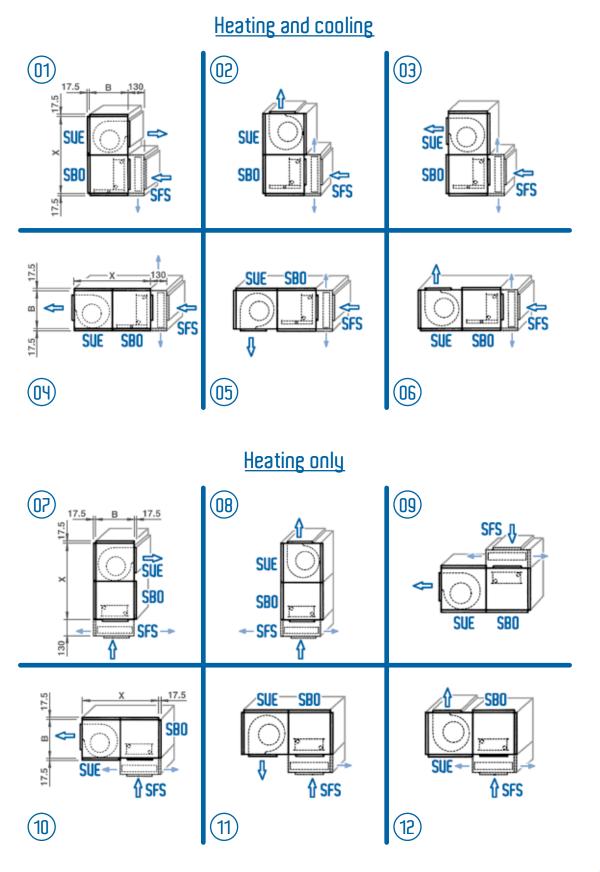


| | 4 | 515 | 480 | 40 | 400 | 960 | 1500 | 1355 |
|------|-----------|-----|-----|------------|-----------|-----|------|------|
| | | | | | | | | |
| | | | S | ection wei | GHTS (kg) | | | |
| | MO | DEL | 1 | | 2 | 3 | | 4 |
| FAN | I SECTION | | 2 | 3 | 28 | 32 | | 52 |
| - | 2 ROWS | | 1 | 4 | 18 | 22 | | 38 |
| lion | 3 ROWS | | 1 | 6 | 20 | 24 | | 42 |
| SECT | 4 ROWS | | 1 | 8 | 22 | 26 | | 45 |
| S | 6 ROWS | | 2 | 2 | 28 | 34 | | 55 |
| COIL | 4 + 2 ROV | VS | - | - | 26 | 30 | | 52 |
| 0 | 6 + 2 ROV | VS | - | - | 32 | 38 | | 62 |



Combination possibilities

In addition to the 12 versions available using standard components a wide range of **further combinations can be achieved** and for each of them you can choose between the four different types of coil.



llcean

OCEAN Performance

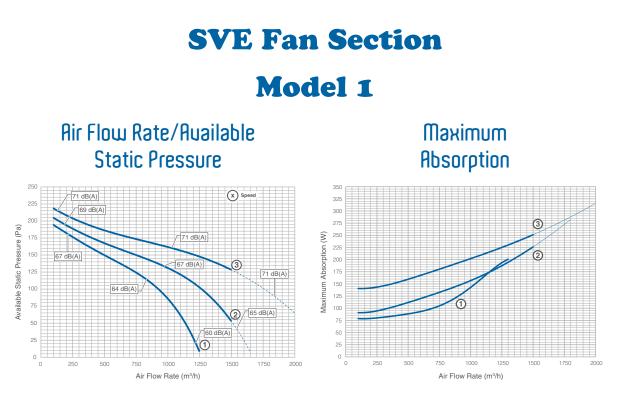
Selection Diagrams of SUE Fan Section with Asynchronous Motor.

The Fan Section is assembled with filtering and air handling sections. The typical curves for unit selection are provided below. Performance curves show fan section typical field of operation, in terms of air flow at specific external static pressures and motor speed. Absorbed electrical power curves are also provided to the operating air flow and motor speed. Maximum operating current and detailed information about sound power are also reported below for each model.

| MODEL | AIR FLOW | AVAILABLE PRESSURE | POWER ABSORPTION |
|-------|------------------------|---------------------------|------------------|
| 1 | 600 — 1400 m³/h | 85 – 150 Pa | 75 – 240 W |
| 2 | 1000 – 2100 m³/h | 65 – 170 Pa | 135 – 375 W |
| 3 | 1500 – 3000 m³/h | 100 – 160 Pa | 250 – 520 W |
| 4 | 2400 – 4500 m³/h | 100 – 350 Pa | 600 – 1100 W |
| MODEL | RECOVERY EFFICIENCY | MAXIMUM ABSORPTION AMP | SOUND POWER |
| 1 | 27% | 2,2 A | 60 – 70 dB(A) |
| 2 | 30% | 2,4 A | 58 – 70 dB(A) |
| 3 | 30% | 2,7 A | 60 – 80 dB(A) |
| 4 | 35% | 4,8 A | 63 – 81 dB(A) |

Quick Selection Item

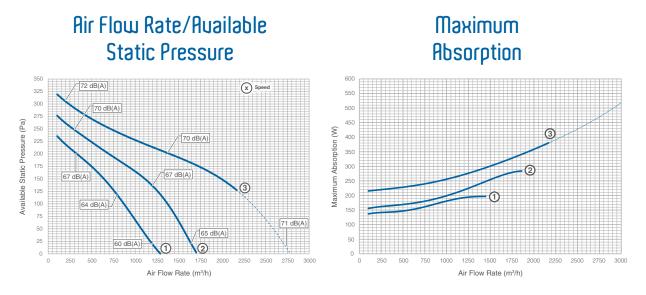




Typical Operative Sector

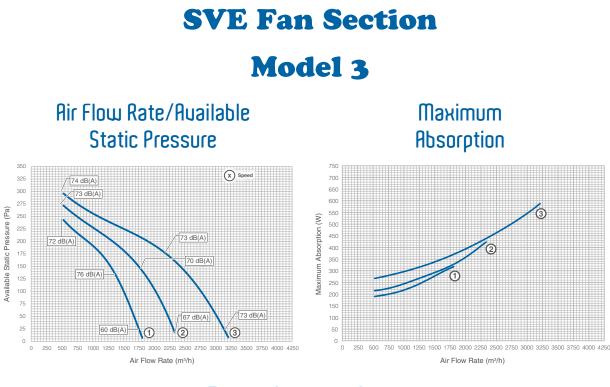
Air Flow Rate: 600 – 1400 m³/h Available Static Pressure: 85 – 150 Pa Sound Power: 60 – 70 dB(A) Power Supply: 75 – 240 W Massima Corrente: 2,2 A

Model 2



Typical Operative Sector

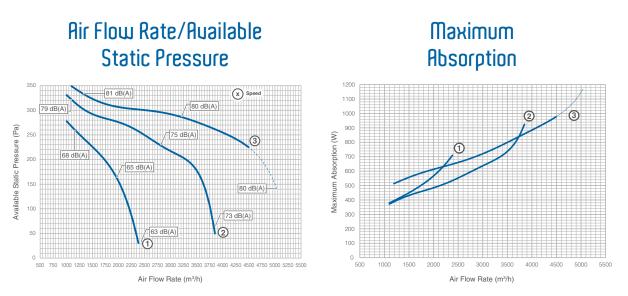
Air Flow Rate: 1000 – 2100 m³/h Available Static Pressure: 65 – 170 Pa Sound Power: 58 – 70 dB(A) Power Supply: 135 – 375 W Maximum Current Input: 2,4 A



Typical Operative Sector

Air Flow Rate: 1500 – 3000 m³/h Available Static Pressure: 100 – 160 Pa Sound Power: 60 – 80 dB(A) Power Supply: 250 – 520 W Maximum Current Input: 2,7 A

Model 4



Typical Operative Sector

Air Flow Rate: 2400 – 4500 m³/h Available Static Pressure: 100 – 350 Pa Sound Power: 63 – 81 dB(A) Power Supply: 600 – 1100 W Maximum Current Input: 4,8 A



OCEAN-ECM Performance

Selection Diagrams of SUE-ECM Fan Section with EC Motor and Inverter.

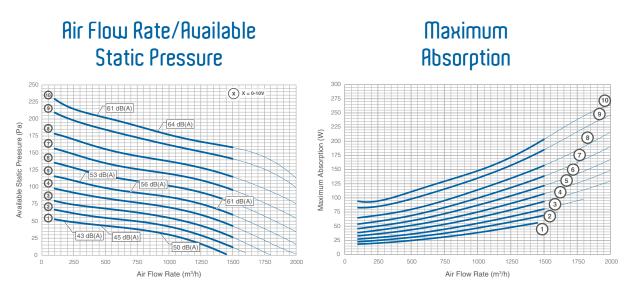
The Fan Section is assembled with filtering and air handling sections. The typical curves for unit selection are provided below. Performance curves show fan section typical field of operation, in terms of air flow at specific external static pressures and motor speed. Absorbed electrical power curves are also provided to the operating air flow and motor speed. Maximum operating current and detailed information about sound power are also reported below for each model.

| MODEL | AIR FLOW RATE | AVAILABLE STATIC PRESSURE RATE | POWER ABSORPTION RATE |
|-------|------------------------|-----------------------------------|--------------------------|
| 1 | 600 — 1400 m³/h | 40 – 160 Pa | 15 – 200 W |
| 2 | 1000 – 2100 m³/h | 40 – 200 Pa | 25 – 370 W |
| 3 | 1500 – 3000 m³/h | 40 – 250 Pa | 30 – 600 W |
| 4 | 2400 – 4500 m³/h | 30 – 270 Pa | 30 – 950 W |
| | | | |
| MODEL | RECOVERY EFFICIENCY | MAXIMUM ABSORPTION AMP | SOUND POWER RATE |
| 1 | 42% | 1,9 A | 45 – 70 dB(A) |
| 2 | 36% | 3,0 A | 50 – 72 dB(A) |
| 3 | 40% | 4,4 A | 50-82 dB(A) |
| 4 | 44% | 5,0 A | 60 - 82 dB(A) |

Quick Selection Item

SVE-ECM Fan Section

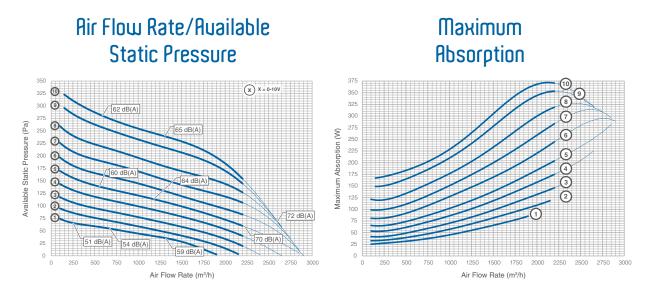
Model 1



Typical Operative Sector

Air Flow Rate: 600 – 1400 m³/h Available Static Pressure: 40 – 160 Pa Sound Power: 45 – 70 dB(A) Power Supply: 15 – 200 W Maximum Current Input: 1,9 A

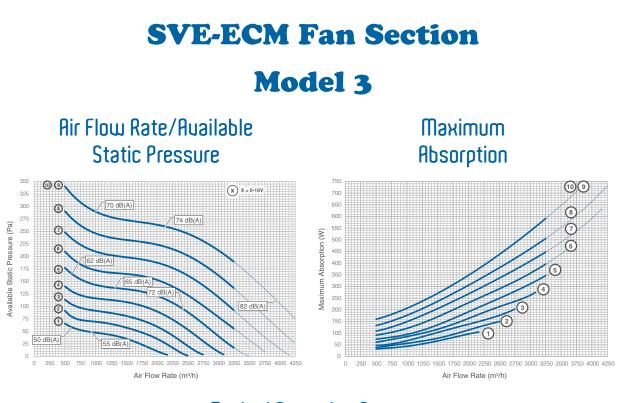
Model 2



Typical Operative Sector

Air Flow Rate: 1000 – 2100 m³/h Available Static Pressure: 40 – 200 Pa Sound Power: 50 – 72 dB(A) Power Supply: 25 – 370 W Maximum Current Input: 3,0 A

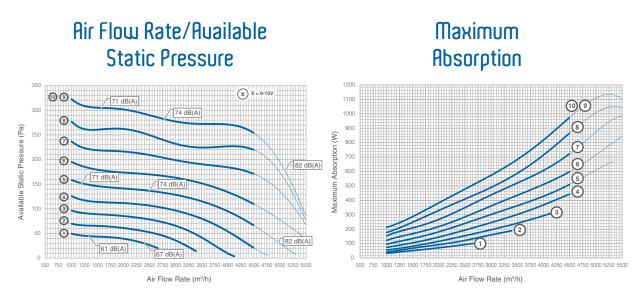




Typical Operative Sector

Air Flow Rate: 1500 – 3000 m³/h Available Static Pressure: 40 – 250 Pa Sound Power: 50 – 82 dB(A) Power Supply: 30 – 600 W Maximum Current Input: 4,4 A

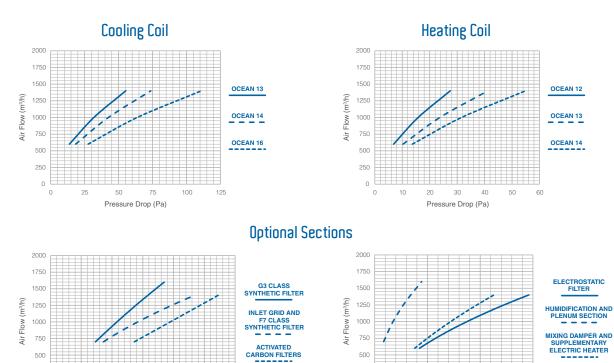
Model 4



Typical Operative Sector

Air Flow Rate: 2400 – 4500 m³/h Available Static Pressure: 30 – 270 Pa Sound Power: 60 – 82 dB(A) Power Supply: 30 – 950 W Maximum Current Input: 5,0 A

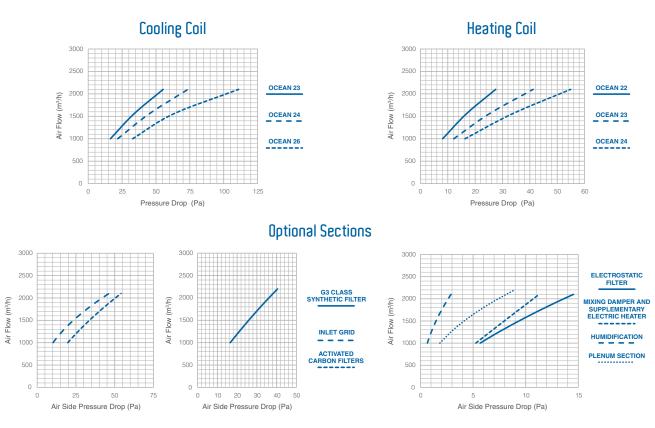
OCEAN/OCEAN-ECM Air Side Pressure Drop Model 1



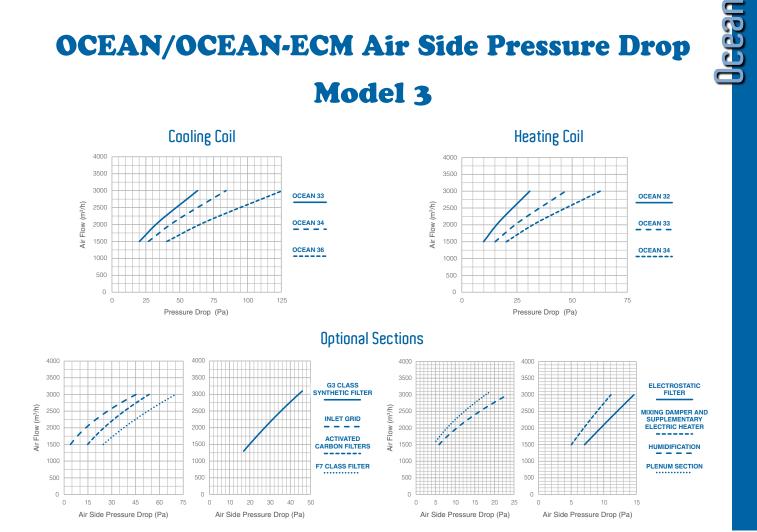
Air Side Pressure Drop (Pa)

Model 2

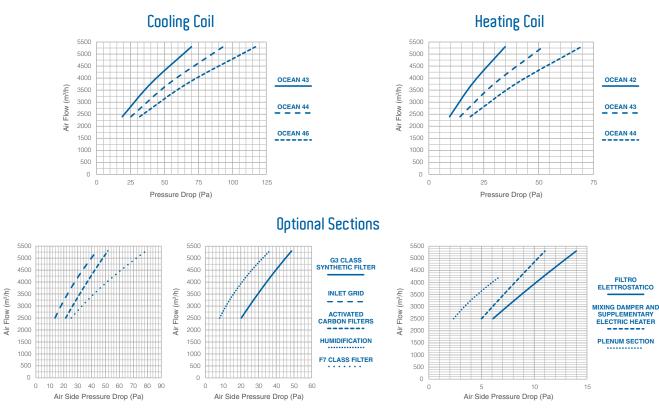
Air Side Pressure Drop (Pa)







Model 4



OCEAN/OCEAN-ECM

| | | E | intering | Air Tei | mperat | ure 20° | C | Entering Air Temperature 20°C | | | | | | | | |
|------|------|-------|-----------------|---------|--------|----------|-------|-------------------------------|----------|-------|-------|----------|-------|--|--|--|
| | | W | F: 45/4(|)°C | W | r: 70/60 |)°C | W | r: 45/40 |)°C | W | T: 70/60 |)°C | | | |
| MOD. | Qv | Ph | Qw | Dp(c) | Ph | Qw | Dp(c) | Ph | Qw | Dp(c) | Ph | Qw | Dp(c) | | | |
| WUD. | m³/h | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | | | |
| | 600 | 2,75 | 472,3 | 6,5 | 5,59 | 480,8 | 6,2 | 4,86 | 836,5 | 18,2 | 7,81 | 671,5 | 11,3 | | | |
| 12 | 1000 | 3,86 | 664,5 | 12,0 | 7,87 | 676,5 | 11,4 | 6,86 | 1180,0 | 33,7 | 11,02 | 947,1 | 21,0 | | | |
| | 1400 | 4,77 | 819,6 | 17,5 | 9,72 | 835,4 | 16,7 | 8,47 | 1457,1 | 49,3 | 13,60 | 1169,0 | 30,6 | | | |
| | 600 | 3,45 | 592,5 | 4,7 | 7,00 | 601,8 | 4,5 | 6,07 | 1043,4 | 13,0 | 9,77 | 839,7 | 8,1 | | | |
| 13 | 1000 | 5,00 | 859,1 | 9,2 | 10,17 | 874,7 | 8,8 | 8,84 | 1520,2 | 25,6 | 14,23 | 1223,5 | 16,0 | | | |
| | 1400 | 6,29 | 1082,3 | 13,9 | 12,82 | 1102,1 | 13,3 | 11,16 | 1918,4 | 39,0 | 17,92 | 1541,1 | 24,3 | | | |
| | 600 | 3,91 | 672,1 | 3,5 | - | - | - | 6,85 | 1177,6 | 9,7 | - | - | - | | | |
| 14 | 1000 | 5,82 | 1000,2 | 7,2 | - | - | - | 10,25 | 1762,8 | 20,0 | 16,51 | 1419,7 | 12,5 | | | |
| | 1400 | 7,44 | 1279,8 | 11,2 | 15,14 | 1301,5 | 10,7 | 13,15 | 2261,5 | 31,2 | 21,15 | 1818,5 | 19,5 | | | |
| | 1000 | 4,43 | 761,8 | 7,4 | 9,02 | 775,2 | 7,0 | 7,84 | 1348,9 | 20,7 | 12,61 | 1084,4 | 12,9 | | | |
| 22 | 1550 | 5,91 | 1016,8 | 12,4 | 12,05 | 1036,5 | 11,9 | 10,51 | 1806,8 | 35,0 | 16,87 | 1450,1 | 21,8 | | | |
| | 2100 | 7,15 | 1229,4 | 17,5 | 14,57 | 1253,1 | 16,7 | 12,71 | 2185,7 | 49,3 | 20,39 | 1753,5 | 30,6 | | | |
| | 1000 | 5,60 | 962,1 | 5,4 | 11,36 | 976,9 | 5,2 | 9,86 | 1696,2 | 15,1 | 15,87 | 1364,6 | 9,4 | | | |
| 23 | 1550 | 7,67 | 1318,6 | 9,6 | 15,62 | 1342,6 | 9,1 | 13,57 | 2334,1 | 26,8 | 21,83 | 1877,0 | 16,7 | | | |
| | 2100 | 9,44 | 1623,5 | 13,9 | 19,23 | 1653,1 | 13,3 | 16,73 | 2877,6 | 39,0 | 26,89 | 2311,6 | 24,3 | | | |
| | 1000 | 6,38 | 1096,9 | 4,1 | - | - | - | 11,19 | 1924,6 | 11,3 | - | - | - | | | |
| 24 | 1550 | 8,94 | 1537,2 | 7,5 | 18,18 | 1563,5 | 7,2 | 15,76 | 2710,3 | 20,9 | 25,39 | 2182,6 | 13,0 | | | |
| | 2100 | 11,16 | 1919,7 | 11,2 | 22,71 | 1952,3 | 10,7 | 19,73 | 3392,1 | 31,2 | 31,72 | 2727,7 | 19,5 | | | |
| | 1500 | 6,53 | 1123,7 | 16,7 | 13,25 | 1139,5 | 15,8 | 11,50 | 1976,9 | 46,1 | 18,48 | 1588,9 | 28,7 | | | |
| 32 | 2100 | 8,15 | 1401,3 | 24,8 | 16,54 | 1422,0 | 23,5 | 14,37 | 2470,4 | 68,9 | 23,06 | 1982,9 | 42,8 | | | |
| | 3000 | 10,18 | 1750,0 | 37,0 | 20,67 | 1777,5 | 35,2 | 17,95 | 3086,7 | 102,8 | 28,80 | 2476,0 | 63,9 | | | |
| | 1500 | 8,26 | 1421,0 | 12,2 | 16,74 | 1439,0 | 11,5 | 14,48 | 2490,8 | 33,6 | 23,30 | 2003,5 | 21,0 | | | |
| 33 | 2100 | 10,52 | 1808,6 | 18,9 | 21,33 | 1833,8 | 17,9 | 18,48 | 3177,3 | 52,0 | 29,72 | 2555,2 | 32,5 | | | |
| | 3000 | 13,39 | 2302,3 | 29,1 | 27,17 | 2336,2 | 27,6 | 23,57 | 4053,7 | 80,6 | 37,90 | 3258,9 | 50,3 | | | |
| | 1500 | 9,47 | 1628,4 | 9,3 | - | - | - | 16,53 | 2842,3 | 25,4 | - | - | - | | | |
| 34 | 2100 | 12,26 | 2107,8 | 14,8 | - | - | - | 21,47 | 3691,9 | 40,6 | 34,56 | 2971,2 | 25,4 | | | |
| | 3000 | 15,89 | 2731,9 | 23,6 | 32,22 | 2770,0 | 22,4 | 27,89 | 4796,0 | 65,0 | 44,85 | 3856,1 | 40,6 | | | |
| | 2400 | 10,13 | 1742,0 | 5,1 | 20,67 | 1777,5 | 4,8 | 18,06 | 3106,0 | 14,3 | 29,03 | 2495,8 | 8,9 | | | |
| 42 | 3400 | 12,71 | 2184,8 | 7,6 | 26,00 | 2235,2 | 7,3 | 22,72 | 3906,7 | 21,7 | 36,50 | 3138,1 | 13,5 | | | |
| | 4500 | 15,14 | 2602,8 | 10,4 | 30,97 | 2663,1 | 10,0 | 27,08 | 4656,8 | 29,7 | 43,50 | 3740,2 | 18,5 | | | |
| | 2400 | 13,29 | 2285,4 | 9,5 | 26,93 | 2315,9 | 8,9 | 23,34 | 4013,8 | 26,1 | 37,55 | 3228,7 | 16,3 | | | |
| 43 | 3400 | 17,07 | 2935,4 | 14,8 | 34,64 | 2978,6 | 14,1 | 30,06 | 5168,5 | 41,1 | 48,31 | 4153,4 | 25,6 | | | |
| | 4500 | 20,71 | 3561,4 | 21,0 | 42,05 | 3615,4 | 19,9 | 36,48 | 6273,3 | 58,2 | 58,62 | 5040,5 | 36,3 | | | |
| | 2400 | 15,26 | 2624,0 | 8,3 | - | - | - | 26,65 | 4581,9 | 22,7 | - | - | - | | | |
| 44 | 3400 | 19,97 | 3434,3 | 13,5 | - | - | - | 34,97 | 6013,8 | 37,0 | 56,33 | 4843,5 | 23,2 | | | |
| | 4500 | 24,55 | 4221,6 | 19,6 | 49,76 | 4278,8 | 18,5 | 43,08 | 7408,1 | 53,9 | 69,30 | 5958,2 | 33,6 | | | |

Heating Emission (kW)

LEGEND:

- **WT** = Water Temperature.



OCEAN/OCEAN-ECM

| | Entering Air Temp. 27°C | | | | | | | Entering Air Temp. 26°C | | | | | °C | Entering Air Temp. 25°C | | | | | |
|------|-------------------------|----------------|--------|--------|----------------|--------|--------|-------------------------|--------|--------|----------------|--------|--------|-------------------------|--------|--------|----------------|--------|--------|
| | | | : 7/1 | - | | 12/1 | | | : 7/1 | - | | 12/1 | | | : 7/1 | - | | 12/1 | |
| | 0 | Pc | | | Pc | | | Pc | | | Pc | - | | Pc | | | Pc | | |
| MOD. | Qv | Ps | Qw | Dp (c) | Ps | Qw | Dp (c) | Ps | Qw | Dp (c) | Ps | Qw | Dp (c) | Ps | Qw | Dp (c) | Ps | Qw | Dp (c) |
| | m³/h | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa |
| | 600 | 3,07 2,21 | 527,5 | 4,7 | 1,60 1,53 | 275,3 | 1,4 | 2,71 2,12 | 466,8 | 3,8 | 1,41 1,34 | 243,2 | 1,1 | 2,39 2,04 | 410,8 | 3,0 | 1,40 1,32 | 241,5 | 1,1 |
| 13 | 1000 | 4,12 3,21 | 708,5 | 8,0 | 2,24 2,13 | 385,9 | 2,6 | 3,64 3,09 | 626,7 | 6,4 | 2,21 2,07 | 380,3 | 2,5 | 3,27 3,00 | 561,5 | 5,2 | 1,98 1,86 | 341,1 | 2,1 |
| | 1400 | 4,93 3,99 | 848,2 | 11,0 | 2,77 2,62 | 476,0 | 3,8 | 4,41 3,90 | 758,2 | 9,0 | 2,74 2,56 | 471,2 | 3,7 | 3,93 3,71 | 676,6 | 7,3 | 2,46 2,29 | 422,5 | 3,1 |
| | 600 | 3,63 2,56 | 624,9 | 3,8 | 1,85 1,78 | 317,4 | 1,1 | 3,21 2,42 | 551,3 | 3,0 | 1,59 1,54 | 273,6 | 0,8 | 2,81 2,30 | 484,1 | 2,4 | 1,63 1,55 | 280,6 | 0,9 |
| 14 | 1000 | 5,02 3,74 | 863,8 | 6,8 | 2,64 2,53 | 453,5 | 2,1 | 4,45 3,58 | 765,4 | 5,4 | 2,48 2,37 | 427,3 | 1,9 | 3,93 3,44 | 675,0 | 4,3 | 2,36 2,23 | 405,4 | 1,7 |
| | 1400 | 6,05 4,75 | 1040,7 | 9,5 | 3,28 3,14 | 564,7 | 3,1 | 5,42 4,60 | 931,3 | 7,8 | 3,30 3,10 | 566,9 | 3,1 | 4,80 4,44 | 825,1 | 6,2 | 2,96 2,78 | 509,0 | 2,6 |
| | 600 | 4,72 3,09 | 811,0 | 7,1 | 2,40 2,25 | 411,9 | 2,1 | 4,19 2,91 | 720,9 | 5,8 | 2,04 1,98 | 350,9 | 1,5 | 3,70 2,73 | 635,5 | 4,6 | 1,74 1,69 | 298,7 | 1,2 |
| 16 | 1000 | 6,84 4,64 | 1176,9 | 14,0 | 3,51 3,39 | 603,2 | 4,1 | 6,07 4,39 | 1043,8 | 11,2 | 3,01 2,92 | 518,1 | 3,1 | 5,35 4,15 | 919,4 | 8,9 | 2,81 2,72 | 483,4 | 2,7 |
| | 1400 | 8,53 5,98 | 1466,3 | 20,7 | 4,44 4,27 | 763,9 | 6,3 | 7,57 5,69 | 1302,2 | 16,7 | 3,84 3,70 | 660,3 | 4,8 | 6,68 5,41 | 1148,6 | 13,4 | 3,87 3,73 | 664,8 | 4,9 |
| | 1000 | 4,94 3,57 | 848,8 | 5,3 | 2,60 2,46 | 446,4 | 1,6 | 4,38 3,45 | 752,7 | 4,3 | 2,36 2,21 | 405,2 | 1,4 | 3,86 3,32 | 664,0 | 3,4 | 2,29 2,13 | 393,4 | 1,3 |
| 23 | 1550 | 6,35 4,85 | 1091,4 | 8,3 | 3,46 3,27 | 595,5 | 2,7 | 5,65 4,74 | 972,2 | 6,8 | 3,42 3,17 | 588,3 | 2,7 | 5,04 4,60 | 866,4 | 5,5 | 3,07 2,84 | 527,5 | 2,2 |
| | 2100 | 7,55 5,98 | 1297,8 | 11,4 | 4,19 3,93 | 720,1 | 3,9 | 6,87 5,85 | 1180,7 | 9,6 | 4,15 3,84 | 714,2 | 3,8 | 5,96 5,56 | 1025,5 | 7,5 | 3,72 3,44 | 639,9 | 3,1 |
| | 1000 | 5,88 4,15 | 1011,2 | 4,3 | 3,00 2,88 | 516,4 | 1,3 | 5,20 3,95 | 894,3 | 3,5 | 2,59 2,49 | 445,9 | 1,0 | 4,57 3,75 | 785,3 | 2,7 | 2,67 2,51 | 458,9 | 1,0 |
| 24 | 1550 | 7,75 5,74 | 1331,9 | 7,1 | 4,07 3,87 | 699,6 | 2,2 | 6,85 5,50 | 1178,2 | 5,7 | 3,87 3,66 | 665,1 | 2,0 | 6,04 5,29 | 1039,3 | 4,6 | 3,65 3,42 | 627,8 | 1,8 |
| | 2100 | 9,25 7,13 | 1591,0 | 9,8 | 4,96 4,71 | 853,2 | 3,1 | 8,18 6,90 | 1406,3 | 7,8 | 4,99 4,65 | 857,7 | 3,1 | 7,25 6,66 | 1247,3 | 6,3 | 4,48 4,17 | 769,7 | 2,6 |
| | 1000 | 7,70 5,06 | 1323,9 | 8,3 | 3,91 3,71 | 673,2 | 2,4 | 6,84 4,76 | 1177,0 | 6,7 | 3,34 3,23 | 574,0 | 1,8 | 6,02 4,47 | 1036,1 | 5,3 | 2,88 2,78 | 495,4 | 1,4 |
| 26 | 1550 | 10,54 7,14 | 1813,0 | 14,6 | 5,41 5,20 | 931,1 | 4,3 | 9,35 6,76 | 1608,4 | 11,8 | 4,65 4,48 | 800,1 | 3,3 | 8,24 6,39 | 1417,3 | 9,4 | 4,37 4,20 | 751,7 | 2,9 |
| | 2100 | 12,87 8,97 | 2213,2 | 21,0 | 6,70 6,41 | 1152,9 | 6,3 | 11,43 8,53 | 1965,5 | 16,9 | 5,79 5,55 | 996,2 | 4,9 | 10,09 8,11 | 1734,8 | 13,5 | 5,83 5,59 | 1002,5 | 4,9 |
| | 1500 | 7,61 5,27 | 1307,9 | 12,9 | 4,04 3,79 | 694,6 | 4,0 | 6,75 5,10 | 1160,8 | 10,4 | 3,52 3,31 | 605,6 | 3,2 | 5,97 4,92 | 1026,0 | 8,3 | 3,51 3,24 | 603,8 | 3,1 |
| 33 | 2100 | 9,20 6,62 | 1582,5 | 18,2 | 5,02 4,69 | 863,8 | 6,0 | 8,20 6,46 | 1409,5 | 14,8 | 4,43 4,13 | 761,1 | 4,8 | 7,29 6,28 | 1253,9 | 12,0 | 4,40 4,04 | 757,4 | 4,7 |
| | 3000 | 11,11 8,40 | 1910,2 | 25,5 | 6,27 5,82 | 1077,5 | 8,9 | 9,94 8,28 | 1708,7 | 20,9 | 6,14 5,60 | 1056,6 | 8,6 | 8,87 8,12 | 1525,8 | 17,0 | 5,53 5,06 | 951,2 | 7,1 |
| | 1500 | 9,11 6,21 | 1566,1 | 10,6 | 4,70 4,46 | 808,5 | 3,2 | 8,06 5,91 | 1385,9 | 8,5 | 4,06 3,86 | 698,7 | 2,4 | 7,11 5,63 | 1222,3 | 6,8 | 4,10 3,82 | 704,7 | 2,5 |
| 34 | 2100 | 11,22 7,90 | 1929,2 | 15,5 | 5,92 5,58 | 1017,9 | 4,8 | 9,96 7,59 | 1713,1 | 12,5 | 5,15 4,87 | 885,5 | 3,7 | 8,79 7,28 | 1511,7 | 10,0 | 5,22 4,84 | 897,9 | 3,8 |
| | 3000 | 13,73 10,12 | 2361,1 | 22,3 | 7,46 7,00 | 1282,8 | 7,3 | 12,25 9,82 | 2106,7 | 18,1 | 6,81 6,29 | 1171,5 | 6,2 | 10,86 9,50 | 1867,8 | 14,6 | 6,66 6,15 | 1145,3 | 5,9 |
| | 1500 | 11,75 7,59 | 2020,9 | 20,4 | 6,04 5,59 | 1039,1 | 6,0 | 10,46 7,15 | 1798,8 | 16,6 | 5,16 4,95 | 887,9 | 4,5 | 9,24 6,73 | 1589,5 | 13,3 | 4,40 | 757,0 | 3,4 |
| 36 | 2100 | 14,96 9,85 | 2572,2 | 31,5 | 7,74 | 1331,1 | 9,4 | 13,30 9,32 | 2286,4 | 25,5 | 6,65 6,35 | 1143,0 | 7,2 | 11,74 8,81 | 2019,1 | 20,4 | 5,71 5,46 | 981,2 | 5,4 |
| | 3000 | 18,89 12,82 | 3248,2 | 48,0 | 9,94 9,42 | 1709,5 | 14,8 | 16,82 12,22 | 2892,3 | 38,9 | 8,60 8,17 | 1478,2 | 11,4 | 14,88 11,63 | 2559,0 | 31,2 | 7,94 7,51 | 1365,7 | 9,9 |
| | 2400 | 9,61 7,90 | 1653,1 | 6,5 | 5,66 5,18 | 973,9 | 2,4 | 10,87 8,20 | 1868,8 | 8,1 | 5,65 5,29 | 970,8 | 2,4 | 12,24 8,49 | 2105,5 | 10,0 | 6,49 6,05 | 1115,3 | 3,1 |
| 43 | 3400 | 11,82 10,21 | 2033,0 | 9,4 | 7,17 6,51 | 1233,7 | 3,7 | 13,30 10,50 | 2287,4 | 11,6 | 7,40 6,73 | 1272,0 | 3,9 | 14,96 10,77 | 2572,1 | 14,3 | 8,14 7,56 | 1399,9 | 4,7 |
| | 4500 | 13,88 12,54 | 2386,2 | 12,5 | 8,58 7,78 | 1475,8 | 5,2 | 15,54 12,78 | 2672,9 | 15,4 | 9,54 8,65 | 1641,1 | 6,2 | 17,37 13,04 | 2987,0 | 18,8 | 9,69 8,96 | 1667,0 | 6,4 |
| | 2400 | 11,58 9,08 | 1991,2 | 6,2 | 6,63 6,18 | 1140,6 | 2,2 | 13,14 9,55 | 2259,8 | 7,8 | 6,59 6,25 | 1133,9 | 2,2 | 14,83 10,02 | 2549,5 | 9,7 | 7,65 | 1315,6 | 2,9 |
| 44 | 3400 | 14,47 11,86 | 2487,6 | 9,3 | 8,58 7,89 | 1476,0 | 3,5 | 16,38 12,38 | 2816,2 | 11,6 | 8,45 7,95 | 1452,3 | 3,4 | 18,48 12,88 | 3177,5 | 14,4 | 9,72 9,12 | 1670,8 | 4,4 |
| | 4500 | 17,12 14,62 | 2944,2 | 12,6 | 10,41 9,54 | 1790,0 | 5,0 | 19,34 15,15 | 3325,0 | 15,6 | 10,39 9,56 | 1786,1 | 5,0 | 21,71 15,68 | 3732,7 | 19,2 | 11,68 10,92 | 2008,6 | 6,2 |
| | 2400 | 13,90 10,28 | 2390,1 | 6,8 | 6,66 6,35 | 1146,1 | 1,8 | 15,76 10,90 | 2709,3 | 8,5 | 7,77 | 1336,3 | 2,3 | 17,73 11,55 | 3048,7 | 10,6 | 9,09 8,64 | 1563,2 | 3,1 |
| 46 | 3400 | 17,68 13,55 | 3041,0 | 10,5 | 9,27 8,76 | 1594,7 | 3,2 | 20,05 14,28 | 3447,5 | 13,2 | 10,07 9,54 | 1731,1 | 3,7 | 22,58 15,04 | 3882,2 | 16,3 | 11,70 11,05 | 2011,2 | 4,9 |
| | 4500 | 21,21 16,82 | 3648,1 | 14,6 | 12,10 11,40 | 2080,0 | 5,2 | 24,01 17,62 | 4129,2 | 18,2 | 12,28 11,60 | 2111,9 | 5,3 | 27,03 18,45 | 4648,6 | 22,6 | 14,19 13,36 | 2440,4 | 6,9 |

Cooling Emission (kW)-Relative Humidity 50%

NB: The complete list of Accessories is on Page 309.

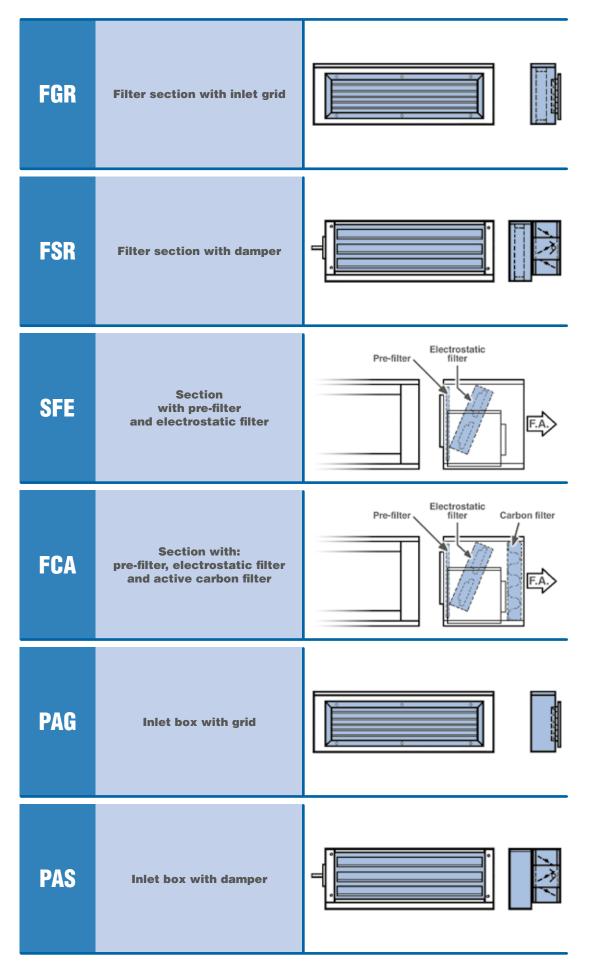
Standard unit components

| BRC | Condensate collection tray Always provided for 01 to 06 versions and in combination with "SUD" humidifying unit and with chilled water coils. | |
|---------|--|--|
| SQS | Suspension brackets Galvanized steel angle brackets for ceiling mounting or wall mounting. | |
| SUD | Humidification section Deck fill humidification with 2 way valve, 230 V 50 Hz supply, with manual regulation of the water flow rate. The "BRC" drip tray must always be used. | |
| BEL | Electric heater incorporating a safety thermostat The electrical heaters must be installed downstream of the fan section. | ////////////////////////////////////// |
| V2300PA | 230V ON-OFF VALVE KIT for main and auxiliary coil | |

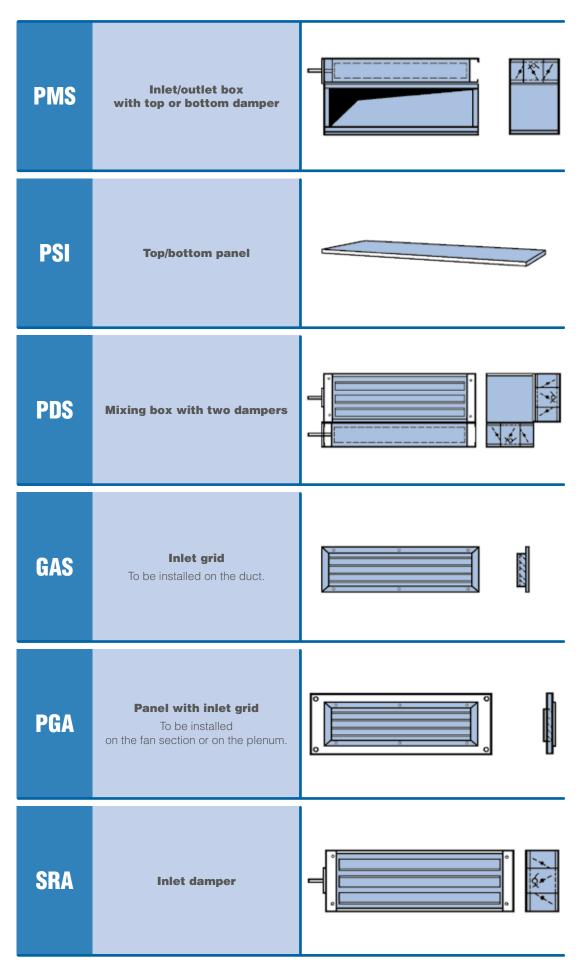


Inlet accessories





Inlet accessories

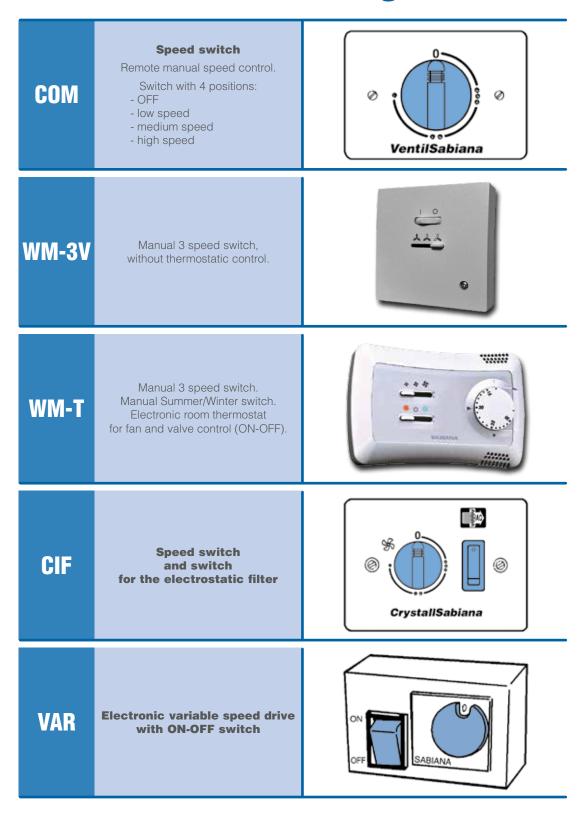




Outlet accessories

| PMB | Supply plenum with double louvres | |
|-----|--|--|
| PMC | Supply plenum with spigots with 3 diffusers (sizes 1-2-3) with 4 diffusers (size 4) | |
| BMA | Supply grid with double louvres To be installed on the duct. | |

Electronic Wall Controls for Ocean Air Handling Units





Electronic Wall Controls for Ocean ECM Air Handling Units

For each unit must be prouided a converter ADC or UP-AU power-unit for Wall Controls (except for WM-S-ECM)

| WM-3V | 3 speed switch control (to use with ADC-S only) |
|----------|--|
| WM-T | 3 speed switch control with electronic thermostat and manual summer/winter switch (to use with ADC-S only) |
| WM-AU | Automatic speed switch with electronic thermostat and summer/winter switch (to use with UP-AU power unit only) |
| T-MB | Wall Control (to use with UP-AU power unit only) |
| WM-S-ECM | Continuous speed control with electronic thermostat, summer/winter switch and LCD display |
| ADCO-S | ADC converter for wall controls separately delivered, for WM-3V and WM-T remote control. |
| UP-AU | UP-AU power unit separately delivered, for WM-AU and T-MB remote control. |

T-MB



WM-S-ECM



Electronic Controls <u>for MB Board</u>

| QCV-MB | MB control panel version (T-MB wall control included) |
|--------|--|
| PSM-DI | Up to 60 multifunction units (to use with QCV-MB control panel only) |

Software/Hardware Control - of seueral Ocean-ECM Air Handling Units

| Sabianet | Sabianet (to use with QCV-MB control panel only) |
|-----------------|--|
| ROUTER-S | Router for Sabianet |
| SIOS | 8 relay output electronic MB Board for Sabianet |





Żeus Air Handling Unit

he Zeus air handling units are suitable for cooling and heating commercial and industrial environments. They are available in **6 horizontal models** and **6 uertical 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 aluminium section bar frame, and **double panelling** filled with a 25 mm thick layer of high-density (90 kg/m³) rock wool insulation that guarantees, as well as high safety standards in the event of fires (**no toxic fumes are released**), excellent noise absorption and a very high degree of thermal insulation, minimising dispersions to the outside. he metal plate used to make the panels is galvanised and pre-painted blue on the outside of the panel.

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.

Technical characteristics of the main components:

Casing: made of an extruded aluminium frame with black fibreglass-reinforced nylon corner joints, and 25mm thick **sandwich panels**. The panels are made by joining two sheets: galvanised plate for the inner panel and galvanised plate painted blue **(RAL 5012)** for the outer panel. The sandwich panel is filled with a layer of high-density (90 kg/m³) rock wool, fire resistant class A1 according to DIN 4102 standards.

Fan assembly: is made up of fan, motor and transmission, fitted on a special mount suspended on rubber anti-vibrating elements, and with anti-vibrating joints at the fan outlet. The elements making up the assembly have **the following characteristics:**

Fans: dual intake centrifugal fans with forward blades, single outlet for sizes 50-80-110, and double outlets for sizes 140-200-250. The fan shroud and impeller are made from galvanized steel.

Electric motors: are suitable for a three-phase 50Hz power supply, voltage 400V; constructional characteristics standardised according to UNEL-MEC form B3. Index of protection IP 55, insulation class F.

Transmission: is made up of a variable-pitch drive pulley, a fixed-pitch fan pulley and drive belt. The motor is fitted to a special slide system used to adjust the tension of the belt.

Coil and filter section: is ready to house the coil and filter.

The coil is supported by a frame and is easily removable and reversible, in terms of the side of the connections, even on site. The coils are with copper pipes and aluminium fins, and are made using 10mm diameter pipes with 25x22 pitch on sizes 50 - 80 - 110, and 16mm diameter pipes with 60mm pitch for sizes 140 - 200 - 250. The water connections are made from steel, with male gas threads. There are coils with 2-3-4 rows for heating only operation, and coils with 3-4-6 rows for cooling operation. The dimensions of the coil section depend on the type of operation. Configuration with horizontal coil for sections for heating only, and configuration with inclined coil and condensate collection tray for sections for cooling. The coil is not suitable for use in corrosive atmospheres

or in environments where aluminium may be subject to corrosion.

<u>Hir filters:</u> the units are fitted with synthetic filters,

class G3 according to EN 779 standard, and class F1 as regards to resistance to fire, according to DIN 53438 standard. The filtering layer is designed with special pleating, 48mm thick, which reduces the overall dimensions of the filter for the same filtering surface. The filters are made from individual cells with a metal frame and galvanized protective mesh.

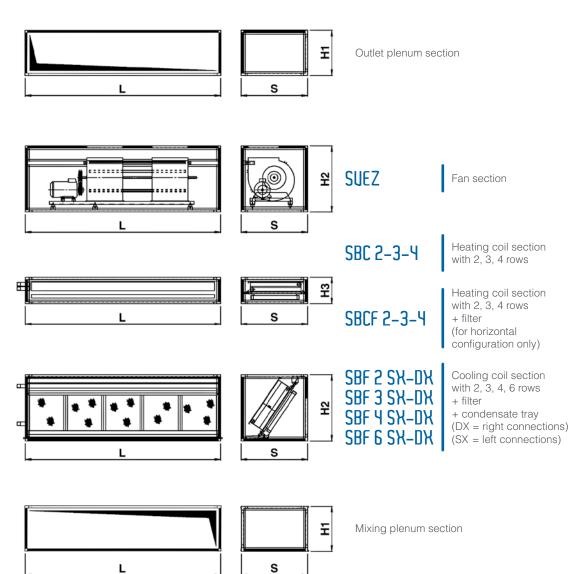


The filters are removed from the same side Of Water connections, so it will be necessary to keep at least 600 mm free on this side,

in order to allow cleaning and replacement of the filters.



Dimensions of the main sections



| MODEL | | | TZ 50 | TZ 80 | TZ 110 | TZ 140 | TZ 200 | TZ 250 |
|------------------------------|----|----|--------|--------|--------|--------|--------|--------|
| Width | L | mm | 1250 | 1900 | 1900 | 2560 | 2580 | 2780 |
| Depth | S | mm | 740 | 740 | 870 | 870 | 1150 | 1270 |
| Fan section height | H2 | mm | 740 | 740 | 870 | 870 | 1150 | 1270 |
| Cooling coil section height | H2 | mm | 740 | 740 | 870 | 870 | 1150 | 1270 |
| Heating coil section height | H3 | mm | 350 | 350 | 350 | 350 | 400 | 450 |
| Intake plenum section height | H1 | mm | 490 | 490 | 590 | 590 | 810 | 810 |
| Outlet plenum section height | H1 | mm | 490 | 490 | 590 | 590 | 810 | 810 |
| Coil header diameter | 2R | Ø | 1" | 1" | 1" 1/4 | 1" 1/2 | 1" 1/2 | 2" |
| Coil header diameter | 3R | Ø | 1" | 1" 1/4 | 1" 1/2 | 1" 1/2 | 2" | 2" |
| Coil header diameter | 4R | Ø | 1" | 1" 1/4 | 1" 1/2 | 1" 1/2 | 2" | 2" 1/2 |
| Coil header diameter | 6R | Ø | 1" 1/4 | 1" 1/2 | 1" 1/2 | 1" 1/2 | 2" | 2" 1/2 |

Weight and water content

| MODEL | ROWS | WATER CONTENT liters | cooling coil section SBF kg | HEATING COIL SECTION SBC kg | FAN SECTION kg | PLENUM SECTION kg |
|--------|------|----------------------------|---|--------------------------------------|----------------------|-------------------------|
| | 2 | 3,2 | 102 | 66 | | |
| T7 E0 | 3 | 4,6 | 105 | 69 | 440 | 50 |
| TZ 50 | 4 | 6,2 | 109 | 72 | 112 | 53 |
| | 6 | 8,2 | 117 | _ | | |
| | 2 | 5,3 | 139 | 91 | | |
| T7 00 | 3 | 7,7 | 143 | 93 | 155 | 75 |
| TZ 80 | 4 | 10,2 | 149 | 99 | 100 | |
| | 6 | 14,8 | 161 | _ | | |
| TZ 110 | 2 | 7,2 | 174 | 107 | | 92 |
| | 3 | 10,7 | 177 | 110 | 187 | |
| | 4 | 14,3 | 185 | 118 | | |
| | 6 | 20,9 | 201 | - | | |
| | 2 | 10,2 | 236 | 152 | | |
| TZ 140 | 3 | 15,3 | 241 | 157 | 248 | 118 |
| 12 140 | 4 | 20,4 | 256 | 172 | 240 11 | 110 |
| | 6 | 30,4 | 286 | - | | |
| | 2 | 15,3 | 324 | 193 | | |
| T7 200 | 3 | 22,5 | 329 | 198 | 379 | 169 |
| TZ 200 | 4 | 29,4 | 351 | 220 | 515 | 105 |
| | 6 | 44,5 | 388 | _ | | |
| | 2 | 18,4 | 376 | 225 | | |
| TZ 250 | 3 | 27,5 | 382 | 231 | 522 | 190 |
| | 4 | 37,5 | 408 | 257 | JLL | 150 |
| | 6 | 55,6 | 459 | - | | |

FAN SECTION Technical Specifications

| MODEL | | TZ 50 | TZ 80 | TZ 110 | TZ 140 | TZ 200 | TZ 2 | 250 |
|---|----|-----------|----------|----------|----------|----------|--------|-------|
| Type of fan | | AT 12/12 | AT 15/15 | AT 18/18 | AT 15/15 | AT 18/18 | AT 18/ | 18G2C |
| Single / Double outlet | | S | S | S | D | D | [|) |
| Power consumption | kW | 1,1 | 2,2 | 3,0 | 4,0 | 5,5 | 7 | ,5 |
| Poles | | 4 | 4 | 4 | 4 | 4 | 4 | |
| Tension 3 ~ 50Hz | | 400 V | | | | | 400 V | 690 V |
| Nominal current | А | 2,6 | 4,8 | 6,6 | 8,3 | 11,0 | 14,6 | 9 |
| Available static pressure Low / High Model (1) Pa | | 0 ÷ 191 | 0 ÷ 256 | 0 ÷ 298 | 0 ÷ 202 | 0 ÷ 164 | 0 ÷ | 166 |
| Available static pressure Low / High Model (2) | Pa | 108 ÷ 238 | 64 ÷ 303 | 87 ÷ 345 | 35 ÷ 257 | 32 ÷ 220 | 0 ÷ | 221 |

Type (1) = The values refer to a configuration with intake grill, filter, 6-row cooling coil, 2-row heating coil, fan section. **Type (2)** = The values refer to a configuration with filter, 4-row cooling coil, fan section.



ZEUS TECHNICAL SPECIFICATIONS

Zeus

HEATING EMISSION: Water temperature 70/60°C – Entering air temperature +20°C

| MODEL | AIR FLOW | ROWS | THERMAL POWER | LEAVING AIR TEMPERATURE | WATER FLOW |
|--------|----------|------|------------------|----------------------------|------------|
| | m³/h | | kW | С° | l/h |
| | | 2 | 32,35 | 41,9 | 2828 |
| TZ 50 | 4400 | 3 | 42,37 | 48,6 | 3704 |
| | | 4 | 49,77 | 53,6 | 4350 |
| | | 2 | 54,38 | 41,9 | 4753 |
| TZ 80 | 7400 | 3 | 71,22 | 48,6 | 6226 |
| | | 4 | 83,66 | 53,6 | 7312 |
| | | 2 | 76,13 | 41,9 | 6655 |
| TZ 110 | 10400 | 3 | 99,70 | 48,6 | 8716 |
| | | 4 | 117,12 | 53,6 | 10236 |
| TT 440 | 14000 | 2 | 98,93 | 41,2 | 8688 |
| TZ 140 | | 3 | 129,05 | 47,5 | 11317 |
| | | 4 | 151,28 | 52,7 | 13266 |
| T7 000 | 20200 | 2 | 142,40 | 41,1 | 12506 |
| TZ 200 | | 3 | 186,88 | 47,5 | 16389 |
| | | 4 | 219,08 | 52,7 | 19211 |
| TT OFO | | 2 | 171,61 | 41,3 | 15071 |
| TZ 250 | 24500 | 3 | 226,34 | 47,7 | 19849 |
| | | 4 | 263,21 | 52,8 | 23082 |

COOLING EMISSION: Water temperature 7/12°C – Entering air temp. +27°C – Relative Humidity 50%

| MODEL | AIR FLOW | ROWS | TOTAL THERMAL POWER | SENSIBLE THERMAL POWER | WATER FLOW |
|--------|----------|------|------------------------|---------------------------|------------|
| | m³/h | | kW | kW | l/h |
| | | 3 | 17,04 | 14,00 | 2931 |
| TZ 50 | 4400 | 4 | 20,82 | 16,40 | 3581 |
| | | 6 | 26,68 | 19,36 | 2656 |
| | | 3 | 28,93 | 23,77 | 4976 |
| TZ 80 | 7400 | 4 | 35,52 | 27,98 | 6109 |
| | | 6 | 45,47 | 33,00 | 7821 |
| | | 3 | 39,98 | 32,85 | 6876 |
| TZ 110 | 10400 | 4 | 50,46 | 39,36 | 8680 |
| | | 6 | 63,85 | 46,01 | 10982 |
| | | 3 | 54,40 | 41,60 | 9333 |
| TZ 140 | 14000 | 4 | 72,10 | 51,10 | 12364 |
| | | 6 | 92,50 | 62,70 | 15830 |
| | | 3 | 78,78 | 60,24 | 13516 |
| TZ 200 | 20200 | 4 | 104,41 | 74,00 | 17913 |
| | | 6 | 133,95 | 90,80 | 22982 |
| | 24500 | 3 | 101,58 | 75,50 | 17428 |
| TZ 250 | | 4 | 126,45 | 89,62 | 21695 |
| | | 6 | 160,94 | 109,09 | 27612 |



Úulcan Pro Air Handling Unit

he **Uulcan Pro** air handling units are built in compliance with the European standards and directives, and 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 main defining feature of this new series 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. he basic configuration is made of sandwich panels

in **two nominal thicknesses**, **35 and 50 mm**, with the outside surface made from pre-painted galvanised steel and the inside surface from galvanised steel, with high density polyurethane foam thermal insulation in between, making the unit suitable for indoor and outdoor installation.

The variants of the basic configuration include stainless steel or Peraluman inside panels, Peraluman outside panels and mineral wool insulation so as to guarantee maximum safety in the event of fires (**no toxic gases are released**) with effective sound absorption.

The units are available in **23 sizes, from 1.000 to 80.000 m³/h**.



The casing of the Uulcan Pro units is made up as follows:

<u>Supporting frame</u> made from extruded aluminium alloy section bars, natural colour.

Joints made from reinforced nylon (for 35 mm thick) and cast aluminium (for 50 mm thick).

Sandwich panels available in two nominal thicknesses, 35 and 50 mm,

made from the following materials:

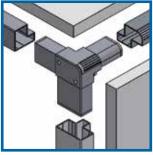
- standard outer: pre-painted galvanised steel, light grey colour.
 - *inner:* galvanised steel. *insulation:* injected polyurethane, density 45 Kg/m³.
- Upon request outer: AISI 304 stainless steel Peraluman.

inner: pre-painted galvanised steel - AISI 304 stainless steel -Peraluman.

insulation: mineral wool, density 90 Kg/m³.

 assembly using galvanised steel self-threading screws, with Neoprene self-adhesive gaskets inserted between the sections and the panels. The panels with mineral wool insulation are assembled using screws 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. For sections with high inside pressure (e.g. fan sections with plug fans or with absolute filters), the doors are completely removable and fixed with bars and screw knobs.

Base frame: made with galvanised steel "C" bars,

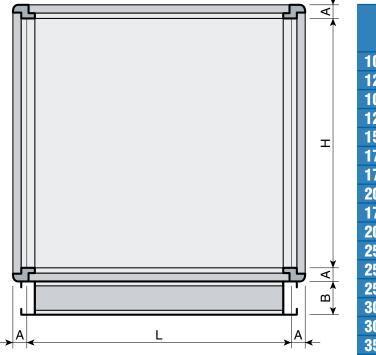
fitted with eyebolts for handling, arranged around the perimeter of each section.

| Specifications of the casing according to UNI-EN 1886 Standard | | | | | |
|--|-----|--|--|--|--|
| Casing strength | D1 | | | | |
| Casing air leakage at -400 Pa | L1 | | | | |
| Casing air leakage at +700 Pa | L1 | | | | |
| Filter bypass leakage | F9 | | | | |
| Thermal transmittance | Т3 | | | | |
| Thermal bridging factor | TB3 | | | | |
| | | | | | |

| Sound Attenuation | | | | | |
|-------------------|---|--|--|--|--|
| Frequency (Hz) | 35 mm and 50 mm thick panels with polyurethane | | | | |
| 125 | dB 11,0 | | | | |
| 250 | dB 9,0 | | | | |
| 500 | dB 11,0 | | | | |
| 1K | dB 12,0 | | | | |
| 2K | dB 15,0 | | | | |
| 4K | dB 27,0 | | | | |
| 8K | dB 34,0 | | | | |



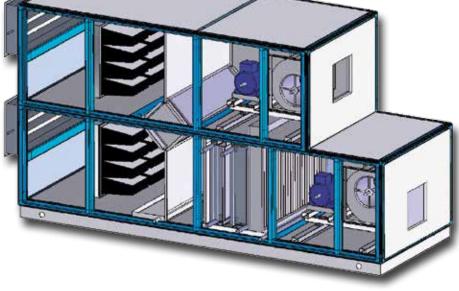
Front dimensions



- \mathbf{R} corresponds to the thickness of the panels
- Base: B = 80/120 mm
- Up to SiZe 250–175 the panels can be selected in two thicknesses, 35 and 50 mm
- From SiZe 250-200 ON the panels are 50 mm thick only

| 0175 | MEASUREMENT (mm) | | |
|-----------|------------------|--------|--|
| SIZE | L | н | |
| 100 - 75 | 650,0 | 457,5 | |
| 125 - 75 | 802,5 | 457,5 | |
| 100 - 100 | 650,0 | 610,0 | |
| 125 - 100 | 802,5 | 610,0 | |
| 150 - 100 | 955,0 | 610,0 | |
| 175 - 100 | 1107,5 | 610,0 | |
| 175 - 125 | 1107,5 | 762,5 | |
| 200 - 125 | 1260,0 | 762,5 | |
| 175 - 150 | 1107,5 | 915,0 | |
| 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 - 200 | 1870,0 | 1220,0 | |
| 300 - 250 | 1870,0 | 1525,0 | |
| 350 - 250 | 2175,0 | 1525,0 | |
| 400 - 250 | 2480,0 | 1525,0 | |
| 400 - 300 | 2480,0 | 1830,0 | |
| 450 - 300 | 2785,0 | 1830,0 | |
| 500 - 300 | 3090,0 | 1830,0 | |
| 550 - 350 | 3395,0 | 2135,0 | |
| 650 - 350 | 4005,0 | 2135,0 | |
| 650 - 400 | 4005,0 | 2440,0 | |



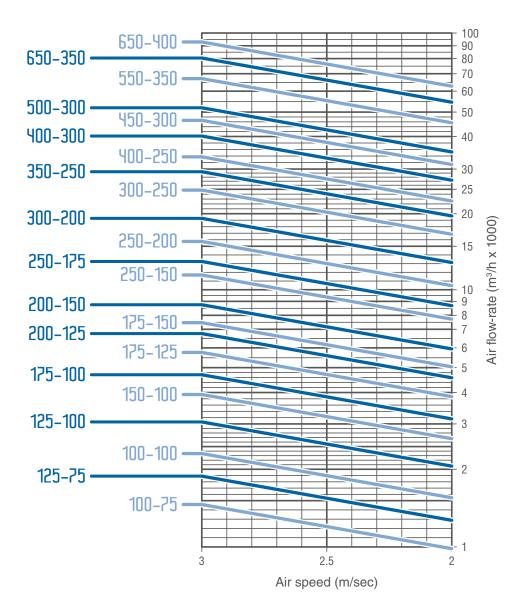




he **Uulcan Pro** air handling units are available in **23 sizes** that can be easily selected using the diagram shown below, based on the air speed through the coil.

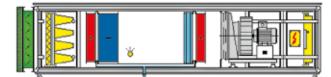
To simplify selection, it must be stressed that in both cooling/dehumidification and heating/humidification, the correct air speed is essential **to auoid entraining drops.**

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**.



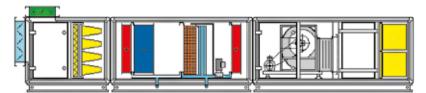


Examples of unit compositions

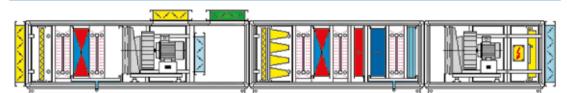


Outdoor monoblock unit with protective cover, rain protection grill with bird guards, louvre, G4+F7 pre-filters, treatment section with pre-heating, cooling and dehumidification coil, steam and post-heating coil.

Motor fan section with plug-fan unit and final filtration with SABIANA Crystall electrical filters.



Modular units in three sections with mixing chamber, 64+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 uentilator and H13 absolute filtration.

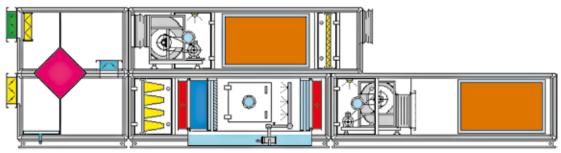


Units with ejection-recirculation section and exterior fresh air intake with G4 filter, heat recovery coil and fan-motor plug-fan assembly. Treatment section with G4+F7 pre-filters, heat recovery coil,

pre-heating coil and cooling coil and dehumidification with droplet separator.

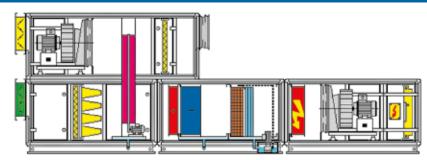
Outlet fan section with plug-fan assembly and SABIANA Crystal electrical filters.

The inlet and outlet of the unit is equipped with a louure with on-off action for interaction with the treated enuironment and germicidal lamps on the surfaces of the coils and mechanical filters.

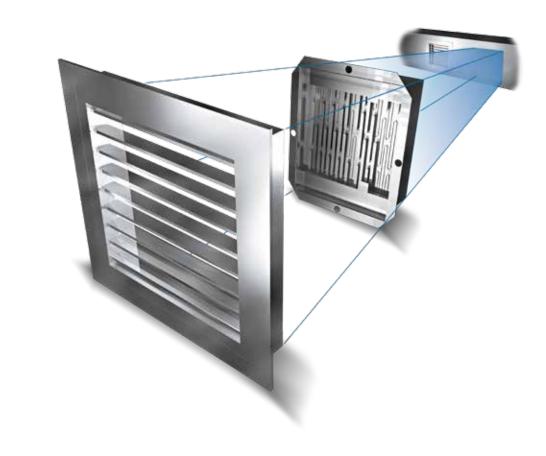


Double deck unit with section equipped with static heat recovery unit with cross flows and with recirculation louvre and GY pre-filters. Treatment section with F8 rigid bag filters, pre-heating, cooling and dehumidification coil, humidifier with nozzles and recirculation pump in a dual chamber with air director/splash guard and droplet separator and post-heating coil. Dutlet fan section with centrifugal transmission fan and silencer.

Duerdeck air intake section with GY filter, silencer and centrifugal transmission fan.



Double deck unit with section equipped with GY+F7 pre-filters and rotary heat recovery unit, treatment section with preheating coil and cooling and dehumidification coil, honeycomb pack humidifier with exterior recirculation pump kit. Motor-fan outlet section with post-heating electrical coil, plug-fan unit and final filtration with SABIANA Crystall electrical filters. Duerdeck air intake section with GY filter and motor-fan plug-fan unit.



Crystall Duct System Electronic Filter

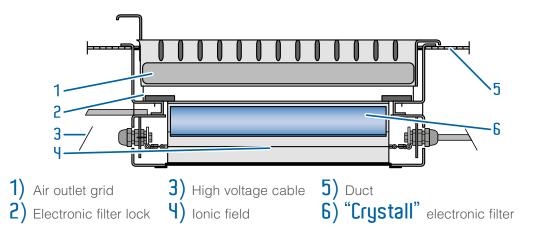
The Crystall Duct System is an innovative

filtering system to be mounted on air outlets or inside ducting. It is made up of **3 elements:**

- a) patented electronic plate filter ("Femec" type)
- b) electronic control and power board
- C) high voltage flexible connection cable

he system has been designed

to reduce the indoors diffusion of various types of pollutants found in the ducting of air conditioning systems. As a result, it is ideal for various types of environments, such as schools, hospitals and rest homes (corridors, waiting rooms, wards), doctors' surgeries, hotels and anywhere indoor air quality needs to be improved.

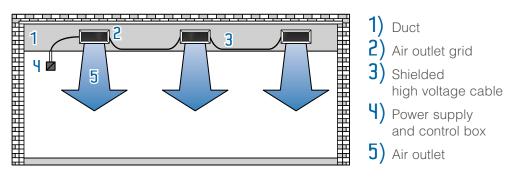


Aduantages of the Crystall Duct System:

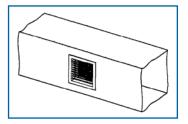
- Installation possible on existing systems
- Low impact on the thermal and aeraulic equilibrium of the installation
- Reduced pressure drop even when the filter is dirty
- Significant bactericide action on biological pollutants
- No cost for replacing the filters (the filters are totally regenerable by simply washing them)
- Very low additional energy costs
- Simple and fast maintenance
- No system downtime for the maintenance of the filter
- Remote power supply that can supply multiple filtering units at the same time

Tests and Certification: the Crystall Duct System has been the subject of numerous efficiency and effectiveness tests to assess the functions and performance of the systems in real conditions. At the Turin Polytechnic Department of Energy, efficiency and pressure drop tests were performed using the EN 779 international filter classification standards, where applicable. The University of Ancona carried out over 180 laboratory tests on microbiological substances (total airborne microbiological load), including bacteria, mould, fungi, etc., which confirmed, through the statistical analysis of the data taken from the Fischer test, the effectiveness of the Crystall electronic filter in reducing the bacterial load.

Other tests have been carried out **in the SABIANA laboratories** on the flow-rate, pressure drop, electrical safety and instrumental efficiency of the filtration process on microparticles by numerically counting the most common particle size categories in various rooms. The particles monitored had the diameters specified by the WHO (World Health Organization) and the EPA (Environmental Protection Agency) as being the most harmful to our health (<2.5 micron PM 2.5), with volumetric counts (number/m³) being performed in a common living environment, using a laser particle counter (LPC).



Contruction features: for more details, see "Crystall Flex System".

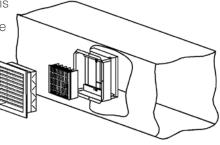


"CDS-E" filter

The **CDS-E external duct filter** is equipped with a perimeter flange that allows to be mounted on standard openings currently on the market. Mounting is done using

the same flange that can be screwed or riveted to the outer wall of the duct. The design of the structure takes into account the fact that the air distribution terminals may or may not

be equipped with a damper. The filter collar, in fact, is of the telescopic type and therefore the depth can be varied during installation.



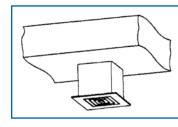
Dimensions

| MODEL | Nominal Dimensions H X B | | | NOMINAL SECTION Sn | FILTER Surface Sf |
|-------|---------------------------------------|-------|-------|---------------------------------|--------------------------------|
| | mm | mm | mm | mq | mq |
| CDS.E | 150 x 300 | 298,5 | 148,5 | 0,045 | 0,023 |
| CDS.E | 150 x 400 | 398,5 | 148,5 | 0,060 | 0,033 |
| CDS.E | 150 x 500 | 498,5 | 148,5 | 0,075 | 0,043 |
| CDS.E | 150 x 600 | 598,5 | 148,5 | 0,090 | 0,053 |
| CDS.E | 200 x 400 | 398,5 | 198,5 | 0,080 | 0,043 |
| CDS.E | 200 x 500 | 498,5 | 198,5 | 0,100 | 0,057 |
| CDS.E | 200 x 600 | 598,5 | 198,5 | 0,120 | 0,070 |
| CDS.E | 200 x 800 | 798,5 | 198,5 | 0,160 | 0,096 |
| CDS.E | 300 x 500 | 498,5 | 298,5 | 0,150 | 0,085 |
| CDS.E | 300 x 600 | 598,5 | 298,5 | 0,180 | 0,105 |
| CDS.E | 300 x 800 | 798,5 | 298,5 | 0,240 | 0,145 |
| CDS.E | 400 x 600 | 598,5 | 398,5 | 0,240 | 0,168 |
| CDS.E | 400 x 800 | 798,5 | 398,5 | 0,320 | 0,232 |
| CDS.E | 400 x 1000 | 998,5 | 398,5 | 0,400 | 0,296 |



"CDS-I" filter

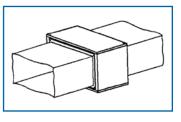
The **CDS-I internal duct filter** is equipped with a smooth containment frame to allow insertion in the terminal duct. It can be mounted using screws or rivets which must

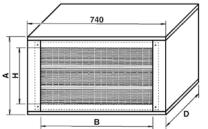


be inserted from inside.

Dimensions

| MODEL | NOMINAL DIMENSIONS H X B | L | A | NOMINAL SECTION Sn | FILTER SURFACE Sf |
|-------|---------------------------------------|-----|-----|---------------------------------|--------------------------------|
| | mm | mm | mm | mq | mq |
| CDS.I | 150 x 225 | 223 | 148 | 0,033 | 0,015 |
| CDS.I | 150 x 300 | 298 | 148 | 0,045 | 0,023 |
| CDS.I | 150 x 375 | 373 | 148 | 0,056 | 0,030 |
| CDS.I | 225 x 225 | 223 | 223 | 0,050 | 0,025 |
| CDS.I | 225 x 375 | 373 | 223 | 0,084 | 0,050 |
| CDS.I | 225 x 450 | 448 | 223 | 0,101 | 0,062 |
| CDS.I | 225 x 525 | 523 | 223 | 0,118 | 0,075 |
| CDS.I | 300 x 300 | 298 | 298 | 0,090 | 0,045 |
| CDS.I | 300 x 375 | 373 | 298 | 0,112 | 0,060 |
| CDS.I | 300 x 450 | 448 | 298 | 0,135 | 0,075 |
| CDS.I | 300 x 525 | 523 | 298 | 0,158 | 0,090 |
| CDS.I | 300 x 600 | 598 | 298 | 0,180 | 0,105 |
| CDS.I | 375 x 375 | 373 | 373 | 0,141 | 0,080 |
| CDS.I | 375 x 450 | 448 | 373 | 0,169 | 0,100 |
| CDS.I | 375 x 600 | 598 | 373 | 0,225 | 0,140 |



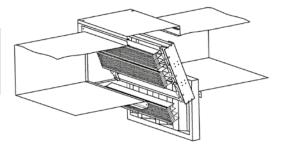


"CDS-C" filter

This type of equipment was specifically created to be able to be inserted **ON the duct** upstream from the air handling units. The structure is in galvanised, prepainted plate and is ready for coupling to flanged ducts. Inside there is a mechanical filter section with a depth of 48mm and an electronic filter section. The unit has a closing panel that allows easy access for mounting and maintenance operations.

Dimensions

| MODEL | NOMINAL DIMENSIONS H X B | A | D | NOMINAL SECTION Sn | FILTER Surface Sf |
|-------|---------------------------------------|---------|-----|---------------------------------|--------------------------------|
| | mm | mm mm r | | mq | mq |
| CDS.C | 600 x 300 | 415 | 380 | 0,18 | 0,207 |
| CDS.C | 600 x 600 | 715 | 680 | 0,36 | 0,414 |





Uulcan Pro Air Handling Units with Crystall Electrostatic Filters for Air Quality and Energy Sauings

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.

Operating principle

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 **COFONO 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 different ions, 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)

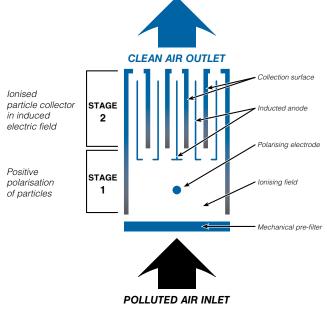
In designing and developing the **SABIANA Crystall modular electrostatic filter** ("FEMEC"), all the positive features of classic plate electrostatic precipitators have been retained. This new solution features two separate and distinct sections, each with different construction technology and with its 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.

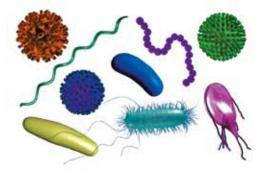
This second section is in turn divided into two parts, a grounded passive part designed to capture the dirt, and another active part, being subjected to the voltage induced by the polarising electrode.



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.



Germicidal effect

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.

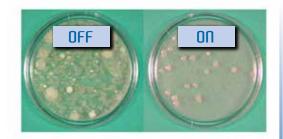
Cocerning **UIFUSES** even though these are very small in size, they can still be intercepted, trapped and **rendered inactive**, as they are always connected to and carried by larger particles.

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:

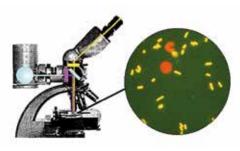


1) Electrostatic filter efficiency in removing bacteria



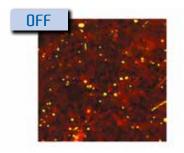
The figure shows **Rodac** plates with specific culture media following exposure to the air delivered into the environment by the ventilation system being tested.

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 remoual** (EPI, Acridine Orange)

2) Electrostatic filter effect on bacterial uitality



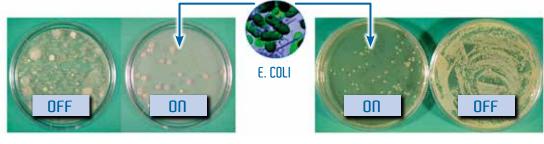
LIUE / DEAD = 2.7



LIUE / DEAD = 1.4

(EPI, propidium iodide-Sybr green I)

3) Electrostatic filter effect on bacterial growth



in air



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.Y.Y7 = 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 uia the air-conditioning system.

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 **Uulcan Pro** air handling units, the electrostatic filters can be **remoued from the side** on slides, with maximum side dimensions of 600 mm, while on the next 9 sizes they can be **remoued from the front**, on the air supply side.

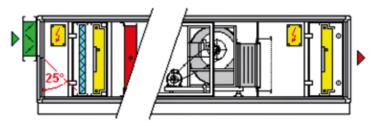


Diagram of the electrostatic filter with removal from the side, placed upstream and downstream of the fan.

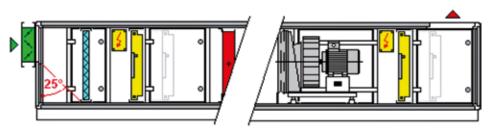
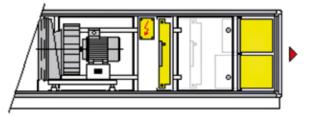
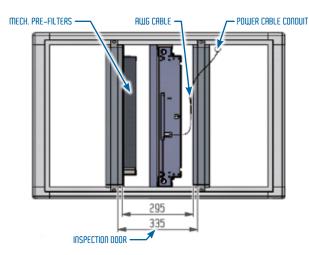


Diagram of the electrostatic filter with removal from the front, placed upstream and downstream of the fan.



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.



Energy savings

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: E = -----1000

- Where: $\begin{bmatrix} E = energy consumption in kW per hour \\ Q = air flow in m³/s$

 - 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 | m³/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 | m³/s | ENERGY CONSOMPTION III Wall/II | | | | |
| 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 dm2 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:



| CON | COMPARISON BETWEEN DIFFERENT FILTRATION SYSTEMS | | | | | | | | | |
|-------------------------------|---|----------------------------|-----------|---------------------------------|------------------------|--|--|--|--|--|
| Туре | Filter wit | h mechani | cal media | Electrostatic filter | Clean outside air | | | | | |
| Standard | | UNI EN 779 | | UNI 11254 | UNI 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 | | Non significativo | - | | | | | |
| Regenerable | I | Non possibil | е | Totale | - | | | | | |
| Disposal | R | ifiuto specia | le | Nessun smaltimento | - | | | | | |
| Maintenance costs | Sostitu | Sostituzione e smaltimento | | Lavaggio | Filtrazione adeguata | | | | | |
| Total bacterial charge risk | | Elevato | | Molto limitato (Azione biocida) | Secondo la sua qualità | | | | | |

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 א 200 mm electrostatic filter module, nom. dim. 600 א 1200 א 100 mm | | | | | | | | | |
|--|--|------------------------------|----------------------------------|---------|--|--|--|--|--|
| FRONTAL VELOCITY | AL VELOCITY AIR FLOW FILTER TYPE 0PERATION and CLASSIFICATION 210 days/year | | | | | | | | |
| m/s | m³/s | | kW/h | kW/h | | | | | |
| | | F7 mechanical filter | 1088.64 | 3784.32 | | | | | |
| 3 | 2.16 | F8 mechanical filter 1128.96 | | 3924.48 | | | | | |
| J | 2.10 | F9 mechanical filter | 1169.28 | 4064.64 | | | | | |
| | | B.PE electrostatic filter | 319.54 | 1110.77 | | | | | |
| | | F7 mechanical filter | 851.76 | 2960.88 | | | | | |
| 2.5 | 1.80 | F8 mechanical filter | 882.00 | 3066.00 | | | | | |
| 2.3 | 1.00 | F9 mechanical filter | 917.28 | 3188.64 | | | | | |
| | | B.PE electrostatic filter | 226.80 | 788.40 | | | | | |
| | | F7 mechanical filter | 650.16 | 2260.08 | | | | | |
| 2 | 1.44 | F8 mechanical filter | 370.32 | 2330.16 | | | | | |
| 2 | 1.44 | F9 mechanical filter | 690.48 | 2400.24 | | | | | |
| | | B.PE electrostatic filter | B.PE electrostatic filter 163.29 | | | | | | |

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.

Flues



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.

Light product lines, including three in plastic, allow the best choice to be made based on the type of boiler and the flue installation site.





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.

he inner wall is made from **AISI 316L** stainless steel, 0.5 mm thick, while the outer wall is made from **AISI 30Y** stainless steel, 0.5 mm thick, or alternatively **COPPEI**, 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.

Main constructional characteristics:

• 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.

<u>Rock wool insulation</u>

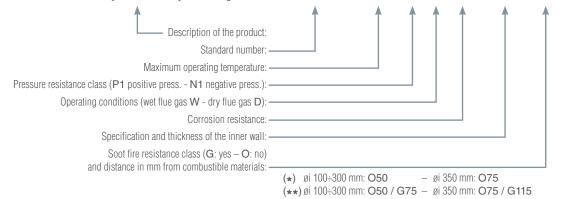
with basaltic composition, minimum density 90 kg/m³, thickness 25 mm.

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 **



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

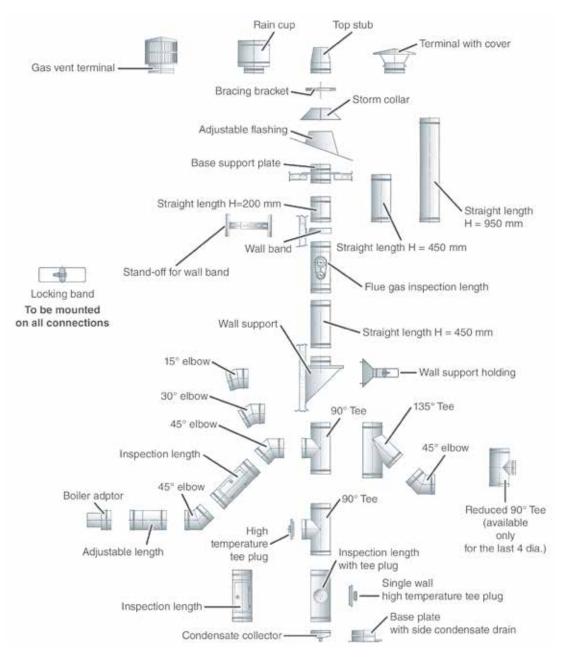
Its specifications are:

- Rapid installation.
- No thermal bridge between the inner wall and outer wall.
- Compact overall dimensions.
- Perfect mechanical resistance, guaranteed by the locking band.

| Sun | nmary Table | | | | | | | | |
|--|-------------|--|-----------|-----------|-----------|-----------|-----------|-----------|------|
| Inside diameters | mm | 100 | 130 | 150 | 180 | 200 | 250 | 300 | 350 |
| Outside diameters | | 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 | | Al | SI 316L | steel, 28 | 3 finish, | nomina | l thickne | ess 0.5 m | าทา |
| Rock wool insulation | | 2 | 25 mm th | nick - Mi | n. dens | ity 90 kg | /m³ - Tc | ol. 0+309 | % |
| InoxSabiana 25 outer wall | | A | ISI 304 : | steel, BA | finish, | nominal | thicknes | ss 0.5 m | m |
| InoxSabiana 25R outer wall | | Annealed DHP copper 99.9, nominal thickness 0.6 mm | | | | | mm | | |
| Pressure class with gasket | | | | | P1 (2 | 00 Pa) | | | |
| Pressure class without gasket | | | N1 | (40 Pa) | negative | e pressu | re opera | tion | |
| Max temperature of the flue gas with gasket | ٦° | | | | 2 | 00 | | | |
| Max temperature of the flue gas without gasket | ٦° | | | | 4 | 50 | | | |
| Gasket | | | | Black c | oloured | silicone | rubber | | |
| Thermal resistance of the wall R at 200°C | m²K/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 | | | | | 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 | | | | | | | |



Typical composition of a chimney



Certification

The InoxSabiana 25/25R range is C C marked according to European Standard EN 1856-1:2009 with the following designations:

 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

voluntary mark

CIG



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.

he 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 **COPPEI**, 0.6 mm thick. The insulation is rock wool, with a minimum density of 90 kg/m³, 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.



Main constructional characteristics:

• 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.

<u>AISI 304 stainless steel outer wall</u>

(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.

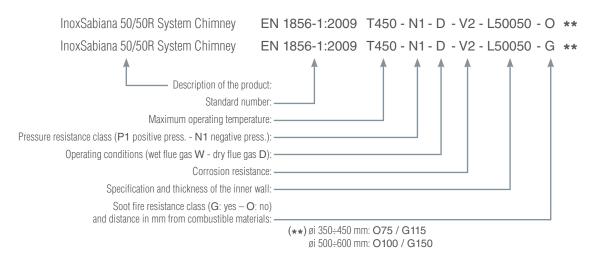
<u>Rock wool insulation</u>

with basaltic composition, minimum density 90 kg/m³, 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



General characteristics:

- Element locking bands.
- Possibility to turn each element 360° while maintaining the tightness characteristics unaltered.

<u>Uniuersal double wall product</u> for the construction of chimneys and flues

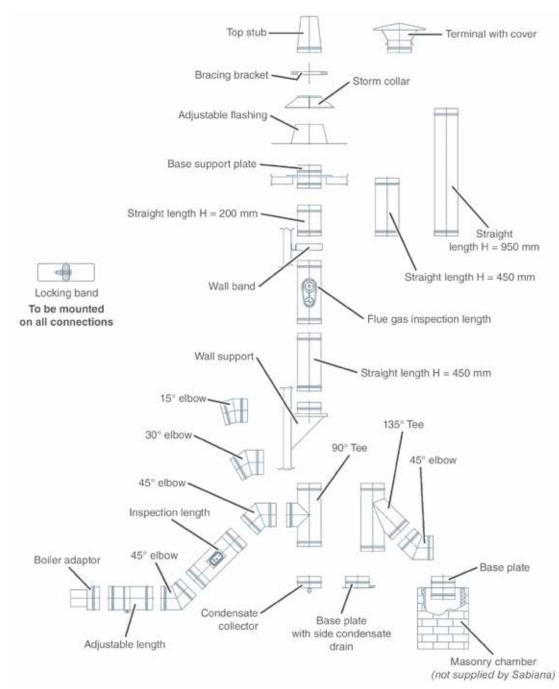
Its specifications are:

- Rapid installation.
- No thermal bridge between the inner wall and outer wall.
- Compact overall dimensions.
- Perfect mechanical resistance, guaranteed by the locking band.

| Surr | nmary Table | | | | | | | |
|---|-------------|--------------------------------|-------------|-------------|-------------|------------------------|-------|--|
| Inside diameters | mm | 350 400 450 500 550 60 | | | | | | |
| Outside diameters | | 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 th | ickness 0. | 5 mm | |
| Rock wool insulation | | 50 r | nm thick - | Min. densi | ity 90 kg/m | ³ - Tol. 0+ | 30% | |
| InoxSabiana 50 outer wall | | AISI | 304 steel, | BA finish, | nominal th | ickness 0.5 | i mm | |
| InoxSabiana 50R outer wall | | Annea | aled DHP c | opper 99.9 | , nominal t | hickness O | .6 mm | |
| Pressure class | | | N1 (40 F | a) negative | e pressure | operation | | |
| Max temperature of the flue gas | °C | | | 4 | 50 | | | |
| Thermal resistance of the wall R at 200°C | m²K/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 | | | Accor | ding to EN | 13384-1 : | 2002 | | |
| Metric screws and bolts | | | | Stainle | ss steel | | | |



Typical composition of a chimney



Certification

The InoxSabiana 50/50R range is CEmarked according to European Standard EN 1856-1:2009 with the following designations:

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.

Cach 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.



Main constructional characteristics:

• 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.

- <u>Silicone</u>
 <u>rubber sealing gasket</u> resistant up to 200°C temperature.
- Longitudinal microplasma welding of each element.
- **<u>90°</u>** tee made using the deep drawing process.
- <u>all clamping elements</u> 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 | | EN 1856-2:2009 | | |
|---|---|----------------|-------------------|---------------------|
| InoxMono Duct | without gasket | EN 1856-2:2009 | T600 - N1 - D - \ | /2 - L50050 - G |
| InoxMono Smoke Duct | with gasket | EN 1856-2:2009 | T200 - P1 - W - \ | /2 - L50050 - O50 |
| InoxMono Smoke Duct | without gasket | EN 1856-2:2009 | T600 - N1 - D - \ | /2 - L50050 - G600M |
| Pressure resistance class (P1 positiv Operating conditions (we Specification Soot fire res | aximum operating te ve press N1 negat et flue gas W - dry fl Corrosion and thickness of the | ard number: | | |

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

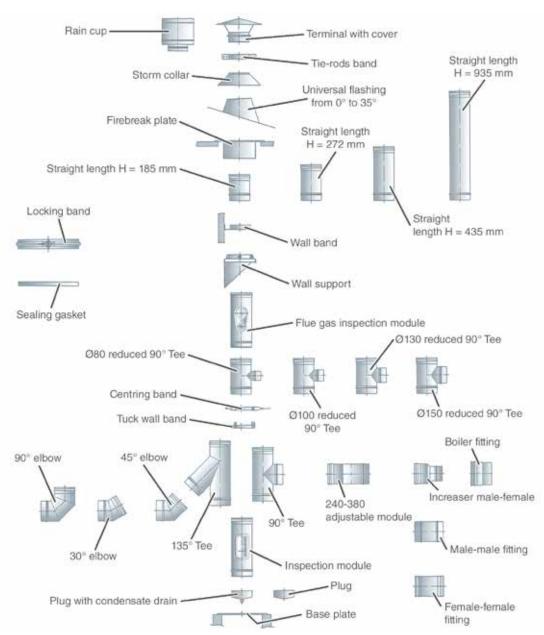
Its specifications are:

- Rapid installation.
- Compact overall dimensions.
- Perfect mechanical resistance, guaranteed by the locking band.

| Summary Table | | | | | | | | | | | | |
|---|------|--|---------|--------|---------|---------|----------|---------|---------|--------|-------|-----|
| Nominal diameters | | 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 | | S | teel Al | SI 316 | L 2B - | AISI 3 | 16L B/ | A nomi | nal thi | ckness | 0.5 m | IM |
| Pressure class with gasket | | | | | | P1 | (200 | Pa) | | | | |
| Pressure class without gasket | | | | Ν | 1 (40 F | Pa) ope | ration | under | pressu | ire | | |
| Max temperature of the flue gas with gasket | О° | | | | | | 200 | | | | | |
| Max temperature of the flue gas without gasket | С° | | | | | | 600 | | | | | |
| Gasket | | | | | Black | colou | red sili | icone r | ubber | | | |
| Minimum distance to combustible materials class O (chimney serving a generator with liquid or gas fuel) | mm | | | | | Smo | ke duo | :t: 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 | | | | | | Stai | nless : | steel | | | | |



Typical composition of a duct



Certification

The InoxMono Sabiana range is C C marked according to European Standard EN 1856-2:2009 with the following designations: 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 - O InoxMono Smoke duct with gasket T200 - P1 - W - V2 - L50050 - O InoxMono Smoke duct with gasket T200 - P1 - W - V2 - L50050 - O InoxMono Smoke duct with gasket T200 - P1 - W - V2 - L50050 - O 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

voluntary mark

CIG



Électra 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 kUJ**. 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.

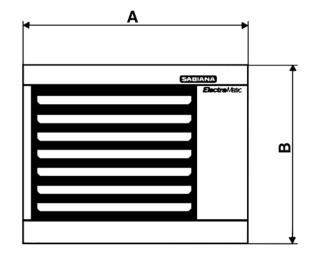
Technical characteristics of the main components:

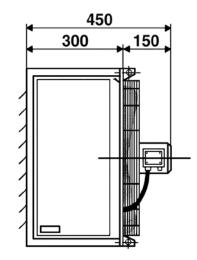
- Covering unit made out of stove-enamelled phosphated steel plate panels.
- Supporting frame in galvanised steel plate.
- Coil with protected electrical resistances, in finned steel pipe. The power is divided into two stages in order to allow it to operate at partialized load.
- Helicoidal fan with light alloy, anti-spark blades, directly connected to the motor axis.
- Asynchronous <u>400U</u> <u>3f</u> <u>50Hz</u>, <u>6</u>–<u>pole</u> 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.

Dimensions, Weight and Technical data





| MODEL Electra | 06E | 09E | 11E | 17E | 24E | 30E | 36E | | | |
|---|-----------------|--------|------|------|-------|-------|-------|-------|-------|--|
| MODEL ElectraMatic | | | EM6 | EM9 | EM11 | EM17 | EM24 | | | |
| Output | | W | 6480 | 9720 | 11100 | 16650 | 24000 | 30000 | 36000 | |
| Dowor stopp | 1 st | W | 3240 | 3240 | 5550 | 5550 | 6000 | 12000 | 12000 | |
| Power steps | 2 nd | W | 3240 | 6480 | 5550 | 11100 | 18000 | 18000 | 24000 | |
| Air flow | | m³/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 | |
| Mounting height | Max. | m | 4.0 | 4.0 | 4.5 | 4.5 | 5.0 | 5.0 | 5.0 | |
| Heliopidel fen | | А | 0.22 | 0.22 | 0.22 | 0.22 | 0.47 | 0.47 | 0.47 | |
| Helicoidal fan | | r.p.m. | 900 | 900 | 900 | 900 | 900 | 900 | 900 | |
| 400 V - 3f - 50 Hz | | W | 110 | 110 | 110 | 110 | 230 | 230 | 230 | |
| Noise level at 5 m (*) | | dB(A) | 43 | 43 | 48 | 48 | 50 | 50 | 50 | |
| Dimensions | А | mm | 570 | 570 | 650 | 650 | 730 | 730 | 730 | |
| Dimensions | В | mm | 470 | 470 | 570 | 570 | 670 | 670 | 670 | |
| Air outlet eastion | L | mm | 400 | 400 | 480 | 480 | 560 | 560 | 560 | |
| Air outlet section | h | mm | 320 | 320 | 420 | 420 | 520 | 520 | 520 | |
| Fan | | Ø | 300 | 300 | 400 | 400 | 500 | 500 | 500 | |
| Weight (approx.) ElectraMatic kg | | 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 5m, directional factor Q = 2, compliant with the EN 3744 standard.



Accessories

Brackets for wall installation

1 100

Control

Remote switch (for ElectraMatic only)





FSE Electric Fan Conuector

The FSE electric fan convectors are made in 5 sizes, with heat outputs from 3 to 8,5 kW.

he 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 of the main components:

Uersion: 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 reuersible**.

Fan assembly: made of ultra-silent double intake **centrifugal fans** with statically and dynamically balanced aluminium impellers keyed directly onto the motor shaft.

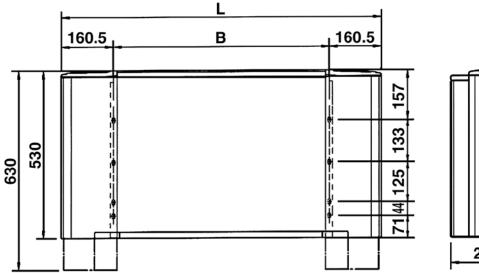
Electric motor: the motor has three speeds with capacitor, and is fitted on sealed for life bearings and is secured on anti-vibration and self-lubricating mountings. Protection IP 20, class B.

<u>Coil</u>: protected electrical resistances with firmed steel pipe. The power is divided into two stages in order to allow it to operate **at partialized load**.

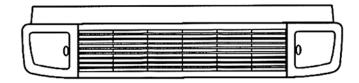
Electrical panel: includes all control and protection automations, auxiliary and safety circuits and the terminal board, ready for connections to the supply line.

<u>Control</u>: built-in control with ON-OFF switch, speed switch and room thermostat.

Dimensions, Weight and Technical data







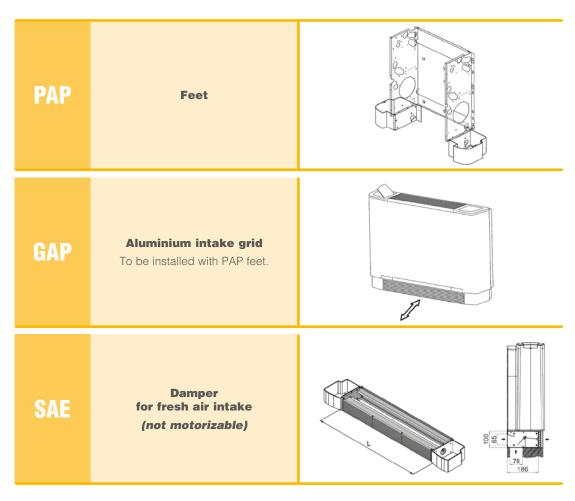
| MODEL | DIMENSI | ONS (mm) | WEIGHT WITH PACKAGING | | | | | |
|-------|---------|----------|-----------------------|--|--|--|--|--|
| | В | L | kg | | | | | |
| FSE 1 | 454 | 775 | 27 | | | | | |
| FSE 2 | 669 | 990 | 31 | | | | | |
| FSE 3 | 884 | 1205 | 39 | | | | | |
| FSE 4 | 1099 | 1420 | 45 | | | | | |
| FSE 5 | 1099 | 1420 | 45 | | | | | |

| | | | 230 U~ | | | | | | 400 U~ (3p+N) | | | | | | | | | | | | | | |
|---------------------|----|--------|--------|-------|------|-------|------|-------|---------------|-------|------|-------|------|------|-------|------|------|-----|------|------|-----|------|------|
| MODEL | | 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 | | m³/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 (*) | | ampère | | 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 m³ room and a reverberation time of 0.5 sec.



Accessories



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.





Primula Miniconvector

The **Primula** fan convectors

are units designed for heating residential and commercial environments in the place of traditional static radiators.

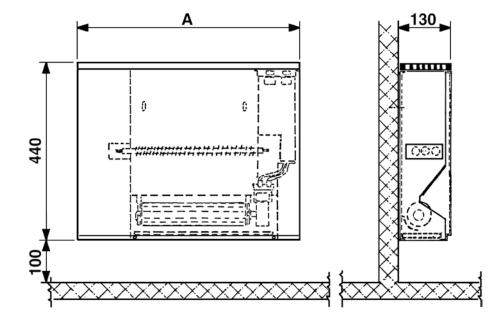
hey are available in **3 SIZES** with electric heaters.

Technical characteristics of the main components:

- Case in stove-enamelled steel, in light gray RAL 7038.
- Switch controlled two speed silent electrical fan unit.
- Coil with single phase 230V electrical resistances in aluminium and finned to allow uniform heat exchange. The coil power is divided into two stages in order to allow it to operate at partialized load.

vailable upon request with **low temperature cut-out thermostat**.

Dimensions, Weight and Technical data



| 1 | MODEL | | PE 10 | PE 15 | PE 20 | | |
|------------------------|------------|-------|----------|-----------|-----------|--|--|
| Electric heater output | | W | 1000 | 1500 | 2000 | | |
| Power steps | | W | 700/1000 | 1000/1500 | 1000/2000 | | |
| Air flow | High speed | m³/h | 120 | 170 | 260 | | |
| All HOW | Low speed | m³/h | 70 | 100 | 150 | | |
| Noise level at 2 m | High speed | dB(A) | 43 | 43 | 44 | | |
| NUISE IEVEI al 2 III | Low speed | dB(A) | 34 | 34 | 35 | | |
| Dimensions | (A) | mm | 560 | 760 | 960 | | |
| Weight | | kg | 10 | 14 | 16 | | |

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all over the globe.



CERTIFICATO n. CERTIFICATE No.

0545/6

SI CERTIFICA CHE IL SISTEMA DI GESTIONE PER LA QUALITA' DI WE HEREBY CERTIFY THAT THE QUALITY MANAGEMENT SYSTEM OPERATED BY

SABIANA S.p.A.

Sede e Unità Operativa Via Piave, 53 - 20011 Corbetta (MI) Direzione e uffici amministrativi, progettazione, assistenza, produzione di apparecchiature per il riscaldamento e il condizionamento dell'aria (aerotermi, termostrisce radianti, unità trattamento aria) e canne fumarie Unità Operativa Via Virgilio, 2 - 20013 Magenta (MI) Produzione di ventilconvettori, magazzino e logistica Italia

E' CONFORME ALLA NORMA IS IN COMPLIANCE WITH THE STANDARD

UNI EN ISO 9001:2008

PER LE SEGUENTI ATTIVITA' FOR THE FOLLOWING ACTIVITIES

EA: 18

Progettazione, produzione e assistenza di apparecchiature per il riscaldamento e il condizionamento dell'aria (aerotermi, termostrisce radianti, ventilconvettori e unità trattamento aria) e canne fumarie.

Design, production and service of heating and air conditioning equipment (unit heaters, radiant panels, fan coil units and air handling units) and chimneys.

Riferirsi al Manuale della Qualità per l'applicabilità dei requisiti della norma di riferimento. Refer to Quality Manual for details of application to reference standard requirements.

Il presente certificato è soggetto al rispetto del regolamento per la certificazione del sistemi di gestione per la qualità delle aziende. The use and the validity of this certificate shall satisfy the requirements of the rules for the certification of company quality management systems.

Data emissione First issue 10/06/1996 Emissione corrente Current issue 10/04/2015

Data di scadenza Expiring date 09/04/2018

2 20

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