CLIVET®

GUIDE ***2024***

PRODUCTS AND SYSTEMS

AIR RENEWAL

2024

CLIVET | AIR CONDITIONING AND AIR QUALITY PARTNER

Inspiring Solutions since 1989

This document is dedicated to those looking for renewal and air purification solutions.

Solutions able to increase the comfort level in the places where we live, work and spend our free time.

Complete year round systems, focused on substantial energy savings and less dependency on the fossil fuels used by traditional HVAC solutions, such as natural gas or oil.

INSPIRING SOLUTIONS

AIR CONDITIONING
AND AIR QUALITY
PARTNER

This Guide is printed every year and presents all Clivet's products with the aim of providing a basis for decisions and evaluations.

More detailed information, updated regularly, is available in the “SYSTEMS AND PRODUCTS” area at www.clivet.com and on Clivet Apps, where they can be downloaded free of charge.

To keep up to date with Clivet news, follow us on our social networks:

CLIVET. INSPIRING SOLUTIONS

IMPORTANCE OF VENTILATION

HOME PRODUCTS FOR AIR RENEWAL

VRF PRODUCTS FOR AIR RENEWAL

APPLIED PRODUCTS FOR AIR RENEWAL

ALWAYS READY FOR THE FUTURE

INSPIRING SOLUTIONS

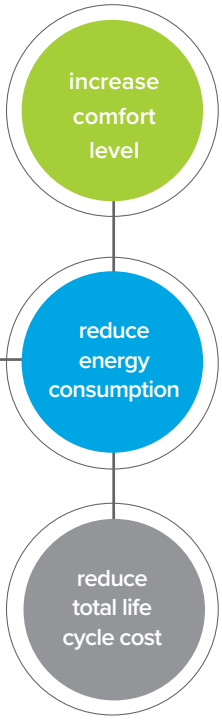
In over 30 years of working on the design, manufacturing and distribution of air conditioning and handling systems, combining high efficiency with minimal environmental impact, Clivet has developed solutions to ensure sustainable comfort and the well-being of people and the environment. Designing and developing year-round air conditioning solutions with innovative technologies are part of Clivet's DNA, which means the company has always been ready for the future.

COMFORT FOR THE PLANET & PEOPLE

OUR VALUES FOR THE SECTORS

IN THE RESIDENTIAL, COMMERCIAL AND INDUSTRIAL SECTORS

Increasing comfort, saving energy and providing customers with the best value for the entire life cycle of the system: these are the values that inspire our systems for the residential, services and industrial sectors.



OUR NUMBERS

36
AGENCIES IN ITALY

53.500 m²
OF PLANTS IN FELTRE - BELLUNO AND VERONA (UTA PRODUCTION)

100
COUNTRIES WE EXPORT TO

975
EMPLOYEES IN ITALY AND ABROAD

8 BRANCHES:
GREAT BRITAIN, GERMANY, INDIA, RUSSIA, UAE, CHINA, BALKANS AND FRANCE

270
WHOLESALERS WITH CONTRACT

170
SERVICE CENTRES

2015
CLIVET LIVE IS BORN

2016
STRATEGIC ALLIANCE WITH MIDEA GROUP

2023
MIDEA GROUP 278 FORTUNE GLOBAL 500
47.3 €M
OF MIDEA TURNOVER

The importance of air quality

In recent years, indoor air quality has become a major issue in people's lives. This growing interest is partly linked to a greater awareness of the effects that indoor pollutants have on the health, well-being and productivity of occupants. But it also relates to a constant demand for higher levels of performance in systems that improve the indoor environment.
According to standard UNI-CTI 10339, the term "air quality" refers to the ability of air to meet certain purity requirements. It must not contain gases, vapour, micro-organisms, smoke or other particulate matter in concentrations likely to cause damage to health or to create discomfort.
The increasing attention to this issue is due to two concurrent factors that have grown in prominence over time and become of central importance today:

- ✓ People spend a large amount of their time in closed spaces (up to 90%)
- ✓ Indoor settings contain increasing amounts and concentrations of pollutants. A study by the Royal College of Pediatrics and Child Health and the Royal College of Physicians has found that the indoor environment is now 5 to 13 times more polluted than the outdoor environment. This is due to many factors, including office equipment such as printers and copiers, cleaning products, emissions from furniture and floors, and the CO_2 produced in crowded spaces.

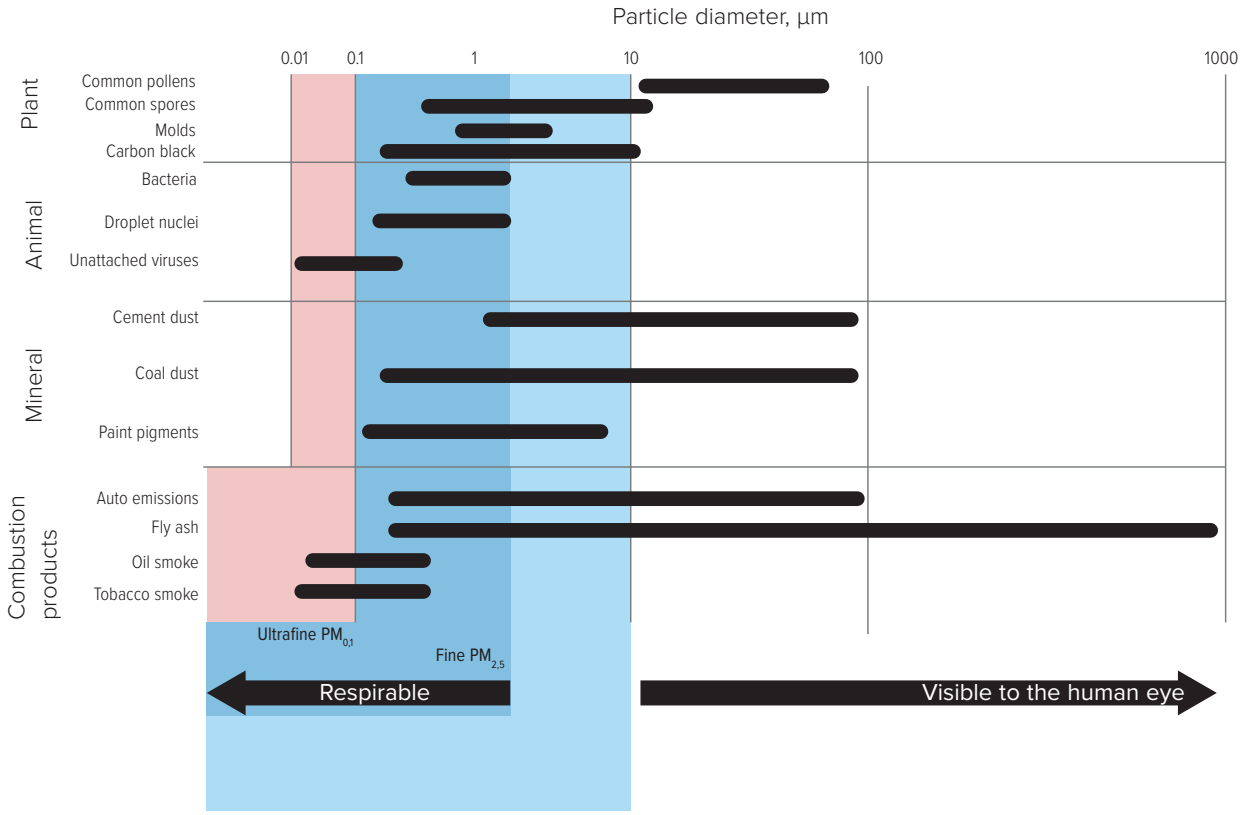
Exposure to indoor pollutants can result in impaired hearing, sight and smell. If they exceed a certain level of concentration, they can trigger various sensory reactions, including headaches, nausea, fatigue, and irritation to the eyes, throat and airways, or produce biological effects in certain parts of the body, such as the skin, the nervous system and the respiratory system. In some cases, these conditions can become acute or chronic.
Air quality problems are increasingly linked to the phenomenon known as "Sick Building Syndrome", where many occupants report a lack of well-being without being able to pinpoint its cause.

TYPES OF PARTICULATE

The effects of particulate matter on health have been closely studied over the last twenty years, and a correlation has been discovered between the level of risk and the size of particle involved. For this reason, standard EN ISO 16890 classifies particulate matter in terms of the size of its constituent particles, and uses the term ePMx to describe the efficiency of an air cleaning device:

Class	Particle µm size
ISO ePM10	$0.3 \leq x \leq 10$
ISO ePM2,5	$0.3 \leq x \leq 2.5$
ISO ePM1	$0.3 \leq x \leq 1$

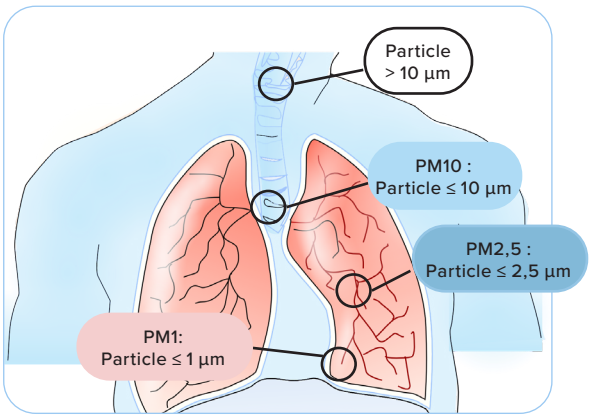
The following diagram illustrates this by showing the typical size of the most common particles from various sources.



HEALTH IMPACT

The danger of these particles is linked to their size, and to their ability to enter the body through the respiratory system and gradually permeate our internal organs:

- ✓ PM_{10}: Particles below 10 µm in diameter can get into the respiratory tract and may lead to reduced lung function.
- ✓ $PM_{2.5}$: Particles below 2.5 µm in diameter can penetrate the airways and cause reduced lung capacity, skin conditions and problems with vision.
- ✓ PM_1: Particles below 1 µm in diameter are the most dangerous category. They are small enough to enter the bloodstream and cause cancer, cardiovascular problems and dementia.



Ways to control particulates

There are three different strategies for eliminating and controlling pollutants in indoor environments:

- ✓ Containing sources of pollution by banning the use of potentially harmful materials
- ✓ Diluting contaminants by constantly exchanging the inside air with fresh outdoor air
- ✓ Removing pollutants by the use of indoor air filtration and/or air renewal systems

STRATEGIES FOR DILUTING CONTAMINANTS

Natural ventilation air renewal

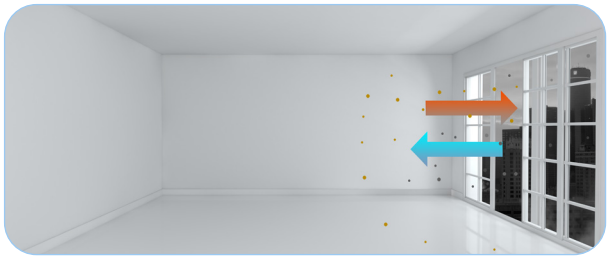
In closed spaces with a heating system without any form of controlled mechanical ventilation, the only way to change the air is by opening the windows. However, this method has a number of disadvantages:

It does not allow for the filtration of incoming air.

It can cause great discomfort to the occupants if there is a significant difference in temperature between the inside and outside environments

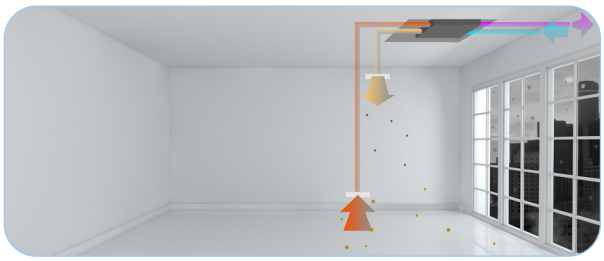
It is extremely inefficient from the energy point of view as the thermal power contained in the expelled air is not recovered.

For these reasons, it is important to have a system with controlled mechanical ventilation, which allows you to change the air while also recovering the heat from the outward flow, leading to considerable savings on energy costs.



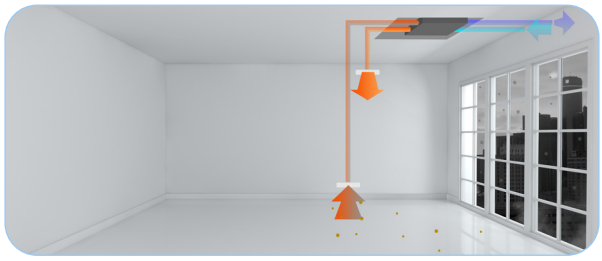
CMV with passive recovery

CMV (Controlled Mechanical Ventilation) with passive recovery allows you to change the air and recover the energy used for heating or cooling that it contains, doing so with an average level of efficiency. The presence of a special ventilation device also enables filtration of both air flows.



CMV with active recovery

CMV with active thermodynamic recovery extracts the stale air and recovers the energy contained in it in a very efficient way, ensuring the air stays warm or cool even in spring and autumn. The inclusion of a special ventilation device also enables filtration of both air flows.



FILTERING EQUIPMENT

The growing focus on the issue of ventilation is also reflected in the increasing number of regulations in this area. These include standard EN 16798 of 2019, a replacement for EN 13779, which allows one to choose the degree of filtration in ventilation systems. The standard refers to the new classification in relation to particle size set out in EN 16890, and distinguishes outdoor and indoor environments in terms of their level of pollution:
The external environment (OutDoor Air) is classified as ODA1, ODA2 and ODA3, with growing annual mean concentrations of PM_{10} and $PM_{2.5}$.
The indoor environment (Supplied Air) is classified as SUP1, SUP2, SUP3, SUP4, SUP5, with growing target annual mean concentrations of PM_{10} and $PM_{2.5}$.

The following table shows the minimum degree of filtration expected from each application, in terms of the external air quality and the target conditions for the indoor space.

				Target conditions indoor air				
				SUP1	SUP2	SUP3	SUP4	SUP5
		$PM_{2,5}$	µg/m³	≤ 2.5	≤ 5	≤ 7.5	≤ 10	≤ 15
		µg/m³	PM_{10}	≤ 5	≤ 10	≤ 15	≤ 20	≤ 30
Outdoor air conditions	ODA1	≤ 10	≤ 20	ePM_1 60%	ePM_1 50%	$ePM_{2,5}$ 60%	ePM_{10} 60%	ePM_{10} 50%
	ODA2	≤ 15	≤ 30	ePM_1 80%	ePM_1 70%	$ePM_{2,5}$ 70%	ePM_{10} 80%	ePM_{10} 60%
	ODA3	> 15	> 30	ePM_1 90%	ePM_1 80%	$ePM_{2,5}$ 80%	ePM_{10} 90%	ePM_{10} 80%

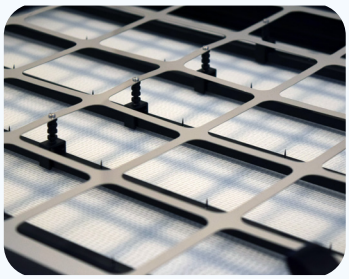
N.B.: Concentrations of PMx particulate matter are reported in terms of an annual mean value.

For the convenience of the reader, the filtration levels of the various products in this catalogue are provided using both the terminology of the new standard (EN ISO 16890) and the preceding one (EN 779).

Clivet's solutions

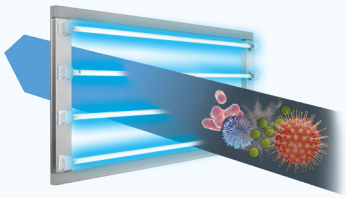
Clivet has always had a particular focus on IEQ (Indoor Environmental Quality) for its residential, commercial and industrial applications. The company has developed a range of innovative CMV (Controlled Mechanical Ventilation) systems over the years, particularly designed for rapid installation. These are highly efficient stand-alone systems, which use different recovery methods (active or passive), as well as different air cleaning systems to control the level of pollutants. The main types of these are:

ELECTROSTATIC FILTERS ELECTRONIC FILTERS



The electrostatic filters in Clivet products can capture particles from 0.01 µm to 100 µm and ensure highly efficient levels of filtration, with ISO ePM1 90% (ISO EN 16890). The powerful microbicidal effect is achieved through a treatment process in several stages. In the first phase, the particles are positively charged by electrodes, creating a potential difference of 10'000 V in the air flow. Next, the particles are captured in a collection unit that can be easily washed clean. In addition to its highly efficient filtration, this type of filter has very low pressure drops, ensuring considerable savings on the cost of ventilation. A recent introduction to the market are electronic filters with iFD technology; these use the same concept of filtration and achieve similar efficiency, but offer extra advantages with regard to installation and maintenance.
The following models offer the option of configuring the electrostatic filters: ELFOFresh EVO (iFD technology), Fresh Large EVO (iFD technology), ZEPHIR³ (available as standard with iFD technology), AQX and CLA.

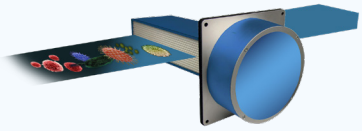
UV-C LAMPS WITH GERMICIDAL EFFECT



UV-C lamps use ultraviolet radiation to purify the air from the development of bacteria, moulds, fungi and viruses. This technology has been familiar for many years and is already used to sanitize objects and surfaces, and to purify water. Recent Japanese[1] and Italian[2] studies have shown its efficacy with regard to Covid-19, indicating the dosage of UV-C rays required to inactivate the virus. The bactericidal and virucidal action is achieved with low pressure mercury lamps through the direct radiation of the air flow with a wavelength of 254 mm.
Since it is installed inside the air handling unit, the system is safe for staff and ensures significantly lower running costs and protection against infectious diseases such as legionellosis and tuberculosis.

1. Rapid inactivation of SARS-CoV-2 with Deep-UV LED irradiation. Faculty of Medicine, University of Miyazaki, Japan.
2. UV-C irradiation is highly effective in inactivating and inhibiting SARS-CoV-2 replication. Italian National Institute for Astrophysics (INAF), Department of Biomedical and Clinical Sciences L. Sacco, University of Milano, Istituto Nazionale dei Tumori Milano Italia.

PHOTOCATALYTIC OXIDATION



Photocatalytic oxidation technology imitates what happens in nature through photocatalysis, i.e. the combination of the sun's UV rays, moisture in the air and certain naturally occurring noble metals. Photocatalytic oxidation modules sanitise both the flow of air and the surfaces of ventilation ducts by decomposing pathogens such as germs, bacteria, viruses and odours. The devices consist of a special UV lamp and a catalyst structure consisting of a metal alloy with a titanium dioxide honeycomb matrix. The combination of these two components allows for the production of hydroxyl radicals and hydrogen peroxide which contribute to the decomposition of pathogens. The modules can be provided for sanitising the internal surfaces and flow of air in the Air Handling Units.

Certifications and safety

Clivet products comply with applicable product directives, as required in all EU countries, in order to guarantee an appropriate level of safety.

With the aim of providing Customer satisfaction, Clivet S.p.A. has supplemented and certified its Quality, Environment and Safety Management Systems, in accordance with the ISO 9001, ISO 14001 and ISO 45001 International Standards.

Clivet is committed in promoting the green building principles and has become a member of GBC Italia. This organization collaborates with **GBC Italia**, the U.S. nonprofit organization that promotes worldwide the **LEED**® system of independent certification.

In 2015, Clivet became a partner of **CasaClima**, as a result, Clivet is now part of a network of companies renowned for their technical expertise and constant focus on sustainable home management.
Where applicable.

KEYMARK is a mark recognized in many European countries for the provision of incentives for the installation of heat pumps for room heating and the production of domestic hot water.
The countries that recognize the mark and the Certified Products are available on https://keymark.eu/en/products/heatpumps/heat-pumps
Where applicable.

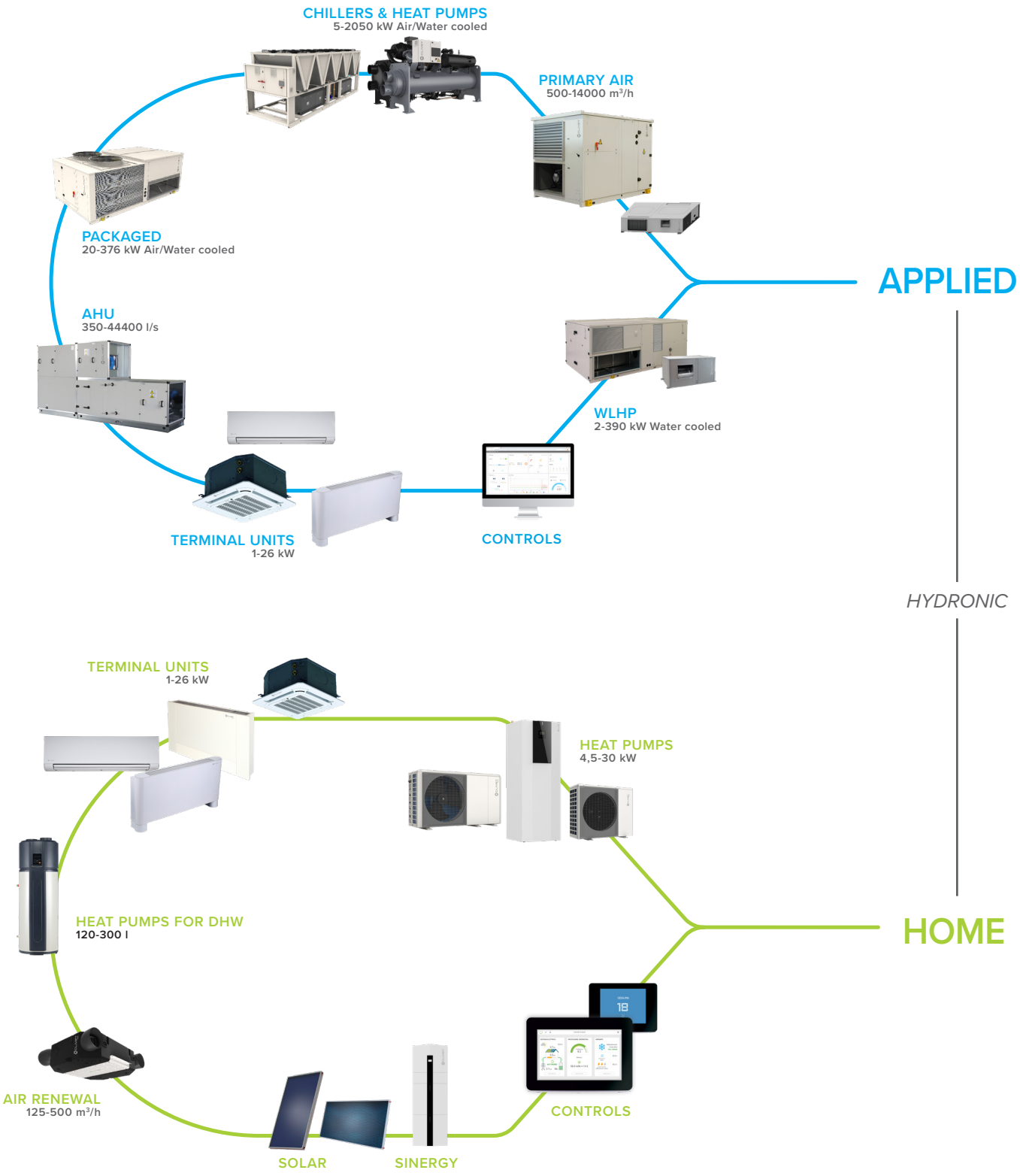
Clivet participates in the EUROVENT "Liquid Chilling Packages and Heat Pumps", "Rooftops", "Air Handling Units" and "VRF" Certification programmes. The products concerned feature in the EUROVENT guide to certified products and on the website www.eurovent-certification.com. The programmes cover water chillers and heat pumps up to the limits set by the purpose of each programme.
Where applicable.

The wide range of Clivet products and complete systems comply with the requirements of the implementing measures for ErP (Energy related Products) Directives 2009/125/EC (Eco-design) and 2010/30/EU (Energy labelling), whose purpose is to reduce the energy consumption of products for heating, cooling, ventilation and hot water production, encouraging the user towards energy-efficient choices.
Directives 2009/125/EC and 2010/30/EU include the following Regulations: (EU) 206/2012, (EU) 626/2011; (EU) 811/2013, (EU) 812/2013, (EU) 813/2013, (EU) 814/2013; (EU) 1253/2014, (EU) 1254/2014; (EU) 2016/2281.

Clivet is involved in the BEYOND GREEN project to promote sustainability and the circular economy together with the other members of SAFE, the consortium system for the circular economy which works to raise public awareness regarding environmental issues, management and valorisation waste, education and training on environmental protection, research on environmental protection.

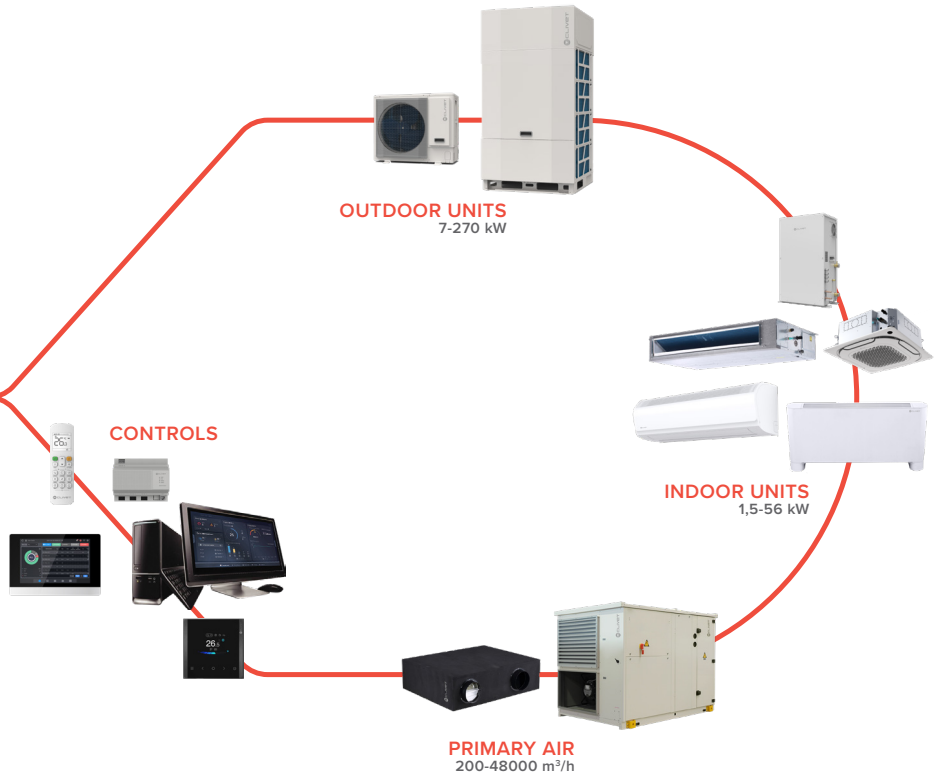
ALL TECHNOLOGIES FOR

A COMPLETE PROPOSAL



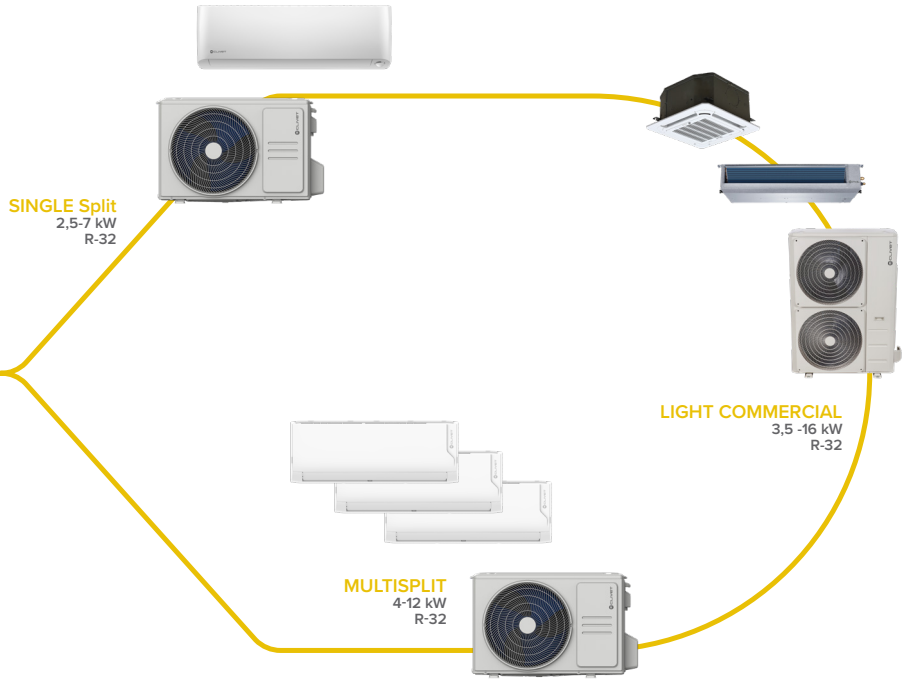
Heating, cooling, air renewal and domestic hot water production

VRF



DIRECT EXPANSION

MONO/MULTI SPLIT



Available only on selected Countries: please check with our Sales Team if Clivet direct expansion VRF and SPLIT Systems are available in your Country.

AIR RENEWAL

Unit range by air flow rate

	Serie		m³/h										
			200	270	300	400	500	800	1000	1300	1500	2000	2090
HOME	ELFOFresh EVO			✓									
VRF	HRV-2B		✓		✓	✓	✓	✓	✓		✓	✓	
VRF	HRV-DX-2						✓		✓				
VRF	HRV-DXL-2										✓		
VRF	AQX VRF Standard												
VRF	AQX VRF Custom									✓	✓	✓	✓
APPLIED	Fresh Large EVO						✓		✓			✓	
APPLIED	ZEPHIR³									✓			
APPLIED	SAHU										✓		✓
APPLIED	AQX									✓	✓	✓	✓
APPLIED	CLA									✓	✓	✓	✓

m³/h																				
2200	2300	2890	3000	3100	4020	4600	5000	5580	7200	7500	7750	9500	10000	10770	12000	12500	15000	20000	48000	100000
	✓			✓																
			✓				✓			✓			✓			✓	✓	✓		
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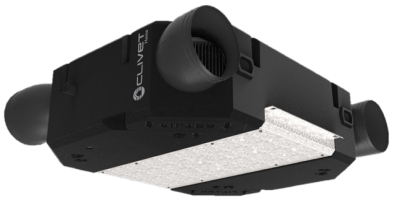
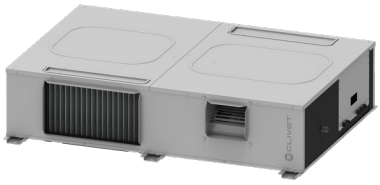
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Note: The values given in the table refer to the nominal flow rates of each size.

HOME products for air renewal

Name	Image	Description
ELFOFresh EVO		Indoor unit equipped with renewal air intake fan, vitiated air exhaust fan, filtering system, thermodynamic heat recovery and rotary compressor with DC inverter.
Fresh Large EVO (See the Applied section)		Indoor unit equipped with renewal air intake fan, vitiated air exhaust fan, filtering system, thermodynamic heat recovery and DC inverter Rotary compressor.

Applications	Key features
For rooms from 90 to 250 m² ✓ Stand-alone residential ✓ Small business ✓ Bars and restaurants ✓ School buildings ✓ Offices	✓ Thermodynamic recovery ✓ Full Inverter technology ✓ Flexible installation ✓ Refrigerant R32 ✓ Fulfils more than 85% of the building's thermal requirements on its own ✓ Air humidity control ✓ Free-cooling ✓ Electronic filters with iFD technology (ISO 16890 ePM1 90%) (optional)
For rooms from 250 to 2000 m² ✓ Small business ✓ School buildings ✓ Offices ✓ Gymnasiums ✓ Medical clinics	✓ Thermodynamic recovery ✓ Refrigerant R32 ✓ Electronic filters with iFD technology (ISO 16890 ePM1 90%) (optional) ✓ Double set of airflows ✓ Extended working limit ✓ Suitable for both residential and light commercial applications.

ELFOFresh EVO

CPAN-YIN 2

THERMODYNAMIC RECOVERY

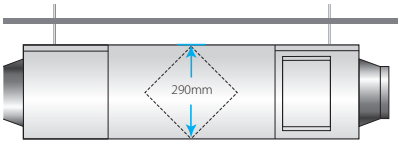
ELFOFresh EVO uses the technology of active thermodynamic recovery to introduce air at a temperature above room temperature during heating and below room temperature during cooling. In this way, in addition to the ventilation load, it is able to meet up to 85% of the building's thermal requirements and reach 100% mid-season.

INVERTER TECHNOLOGY

Inverter technology allows the unit to operate even at reduced power and ensure high performance at any time of the year. The compartment is insulated for maximum silence.

INSTALLATION FLEXIBILITY

The unit is easy to install in a false ceiling as it measures only 290 mm in height and weighs just 44 kg.



FREE COOLING

In the summer, when it is warm outdoor, the thermodynamic circuit is not activated. This means that the air, once filtered, is introduced directly into the room, reducing the thermal load of the system.

REFRIGERANT R32

The refrigeration circuit uses environmentally friendly R32 refrigerant which has:

- Low GWP (Global Warming Potential)
- Improved performance in extreme conditions
- Smaller refrigerant charge
- High coefficient of heat exchange

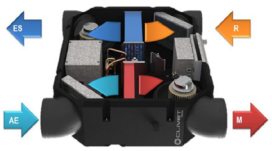
BUILT-IN WI-FI FOR CONNECTION TO THE DEDICATED APP

The MSmartHome APP can be used to manage these main functions:

- Switching on and off
- Changing summer/winter mode
- Setting "ventilation only" mode
- Enabling of silent mode
- Setting the desired temperature

NO CROSS CONTAMINATION

The air intake and air extraction sections are fully separated.



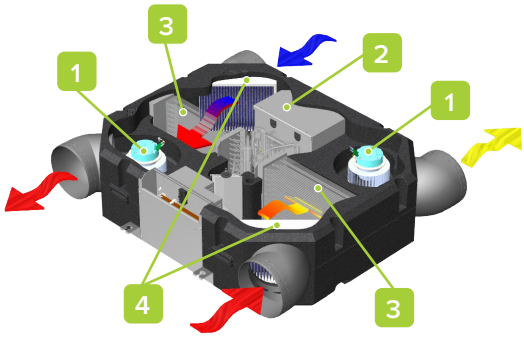
ELECTRONIC FILTRATION WITH IFD TECHNOLOGY (OPTIONAL)

High performance electronic filters with iFD technology can be provided for optimal air purification:

- Degree of filtration equivalent to that of conventional E10 filters (ISO 16890 ePM1 90%)
- Extremely low pressure drops
- Ease of maintenance and regeneration

SIMPLIFIES THE SYSTEM AND INCREASES ITS EFFICIENCY

The components are all housed in a single unit. In addition, the energy generated by the active thermodynamic recuperator reduces the capacity and therefore the cost of the optional air conditioning system.



1. DC inverter fan with constant flow
2. Inverter DC rotary compressor
3. Air-gas finned exchanger
4. Air filter

technical data

CPAN-YIN 2

ELFOFresh EVO

Size		CPAN-YIN 2			Size 2		
Ventilation	Airflow	m^3/h	125	150	210	270	320
	Nominal static pressure / max.	Pa	50 / 120	50 / 120	50 / 120	50 / 120	50 / 120
	Filtration class on the supply side EN 779	-	M5	M5	M5	M5	M5
	Filtration class on the supply side EN ISO 16890	-	ePM10 50%	ePM10 50%	ePM10 50%	ePM10 50%	ePM10 50%
Cooling (1)	Capacity	kW	1,57	1,64	1,73	1,92	2,23
	Total power input	kW	0,36	0,52	0,53	0,55	0,81
	EER	-	4,34	3,15	3,26	3,50	2,77
Heating (2)	Capacity	kW	1,97	2,10	2,21	2,37	2,45
	Total power input	kW	0,40	0,52	0,47	0,37	0,32
	COP	-	4,93	4,04	4,70	6,50	7,66
Refrigeration circuits		Nr	1	1	1	1	1
Refrigerant charge		kg	0,3	0,3	0,3	0,3	0,3
No. of compressors		Nr	1	1	1	1	1
Type of compressors (3)		-	ROT Inverter	ROT Inverter	ROT Inverter	ROT Inverter	ROT Inverter
Sound pressure level (4)		dB(A)	34	35	37	41	45
Dimensions (Width x Height x Depth)		mm	1107x290x900	1107x290x900	1107x290x900	1107x290x900	1107x290x900
Weight		kg	44	44	44	44	44
Air connection diameters		mm	200				
Operating temperature range		°C	-20 ~ 45	-20 ~ 45	-20 ~ 45	-20 ~ 45	-20 ~ 45
Power supply		V\Ph\Hz	220-240/1~/50				

Data according to EN 14511:2018 and referring to available pressure of 50Pa

In cooling mode, the unit can reduce the capacity to ensure specific humidity of the air supplied at the set point

(1) The data are calculated with an ambient temperature of 35°C D.B. / 24 W.B., extracted air temperature of 27°C D.B. / 19°C W.B.

(2) The data are calculated with an ambient temperature of -5°C D.B. / -5.4 W.B., extracted air temperature of 20°C D.B. / 13.7°C W.B.

(3) ROT = rotary compressor

(4) Sound pressure levels evaluated at a distance of 1m from the external surface of the ducted unit installed in the false ceiling

configurations

TYPE OF INSTALLATION:

-	false ceiling (standard)
EI	in-view installation

AIR FILTRATION:

-	Standard filter (standard)
FIFD	Electronic filters with iFD technology (ISO 16890 ePM1 90%)

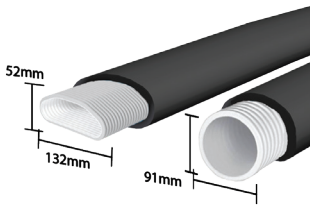
ELFOAir

GENERAL FEATURES

- Flexible in installation thanks to the use of flexible and usable ducts
- Simple in selecting the components and in the installation
- Air quality assured by the use of antistatic and antibacterial ducts
- Homogenous air diffusion thanks to the special diffusers
- AIRJET

ANTISTATIC AND ANTIBACTERIAL

The inner surface of the flexible ducts is lined with a special plastic film treated with silver ions that provides excellent antistatic and antibacterial properties and guarantees top hygiene levels of the treated air.
Furthermore the internal smooth surface of the ducts ensures low pressure drops and therefore reduces consumptions for ventilation.



ACCESSORIES

Internal suction and supply grilles		DAIR50X	AIRJET 50/I supply diffuser - white frame and black inside
		DAIR80X	AIRJET 80/I supply diffuser - white frame and black inside
		GAIR50X	Intake grille + extractable filter AIRJET 50/A - white frame and black inside
		GAIR80X	Intake grille + extractable filter AIRJET 80/A - white frame and black inside
		PAIR50X	Suction/supply plenum with AIRJET 50 control damper - rear connection
		PAIR80X	Suction/supply plenum with AIRJET 80 control damper - rear connection
		GINOX	Suction/supply rectangular grill 350x130 mm stainless
		GIVEX	Suction/supply rectangular grill 350x130 mm white
		FREX	Filter for rectangular grilles 350x130 mm (5pz.)
		VIEX	Extraction/intake valve in ABS DN125 without air filter
		FT125X	Filter for DN125 valve (5pz.)
		GQIEX	Extraction/intake squared grill of DN125 joint with air filter
Round tube distribution (from the distribution box to outlet) (from the distribution box to outlet)		TFT90X	DN90 round flexible tube (Int. diam. 78mm) in a 20m. coil without insulation
		IT90X	Insulation in a 15mt. coil for DN90 round flexible tube
		CBT90X	Connector to distribution box for DN90 round tube
		GIUTX	Connecting joint for DN90 round tube
		CT90X	Printed curve of 90-degree angle for DN90 round tube
		A90DTX	90-degree adaptor, double DN90 round tube for DN125 valve
		TACTX	Blind plug for DN90 round tube (5pz.)
		ANFTX	DN90 seal O-Ring (10pz.)

Flat tube distribution (from the distribution box to outlet)		TFPNX	Flat flexible tube 132x52mm in a 20mt. coil without insulation
		IT100X	Insulation in a 20mt. coil for flat flexible tube 132x52
		COBPX	Connector to distribution box for flat tube
		GIUPX	Seal and connecting joint for flat tube (10pz.)
		CVP90X	Vertical 90-degree curve for flat tube
		COP90X	Horizontal 90-degree curve for flat tube
		CTP180X	Joint for 180-degree flat tube rotation
		A90MPX	90-degree adaptor, single tube for DN125 valve
		A90DPX	90-degree adaptor, double flat tube for DN125 valve
		ADMPX	Straight adaptor, single flat tube for DN125 valve
		A90GPX	90-degree adaptor, single flat tube for level grill
		TACPX	Blind plug for flat tube (5pz.)
		ANFPX	Fixing ring for flat tube (10pz.)
		REPPX	Flow controller for flat tube
		RTPTX	Round/flat tube connecting joint
		REGPX	Automatic capacity controller DN 75-90 mm (20-50 m³/h)
External distribution (Ducts from the outside to the unit and from the unit to the distribution boxes)		BD8CX	Distribution box of DN150-200 joint with 8 connections
		BD14CX	Distribution box of DN200 joint with 14 connections
		TFIS150X	DN150 soundproofing insulated flexible tube in a 10mt. Coil
		TFIS200X	DN200 soundproofing insulated flexible tube in a 10mt. coil
		TFIS250X	DN250 soundproofing insulated flexible tube in a 10mt. coil
		GR150X	Exhaust / return square wall grille with circular coupling DN150
		GR200X	Exhaust / return square wall grig with circular coupling DN200
		GR250X	Exhaust / return square wall grig with circular coupling DN250
		GF150X	F/F DN150 Joint
		GF200X	F/F DN200 Joint
		GF250X	F/F DN250 Joint
		R2015X	DN200-DN150 Reducer
		R2520X	DN250-DN200 Reducer
		DY200X	DN200-DN200-DN200 Y-branch
		DY250X	DN250-DN200-DN200 Y-branch

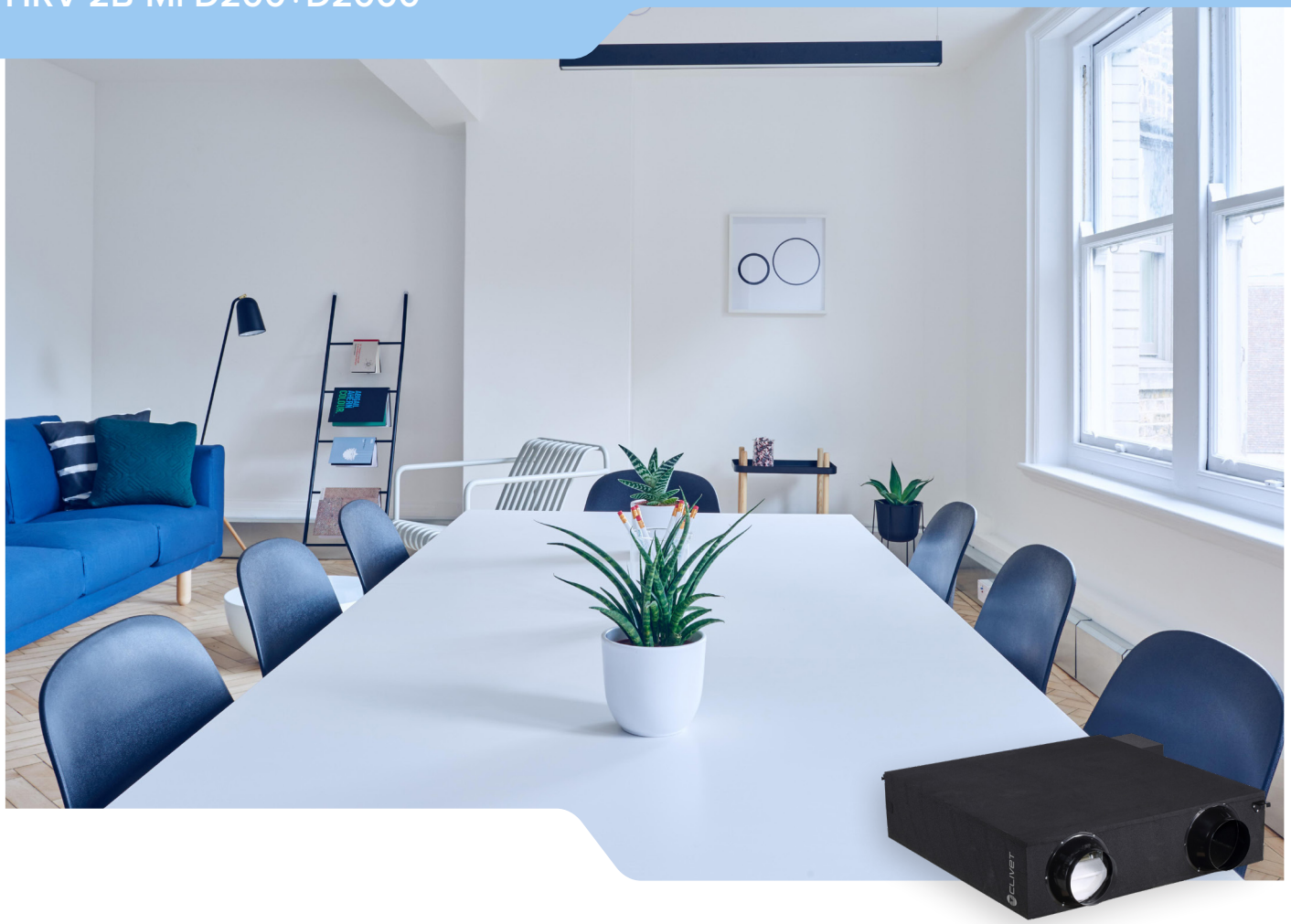
VRF products for air renewal

Name	Image	Description
HRV-2B		Ducted indoor unit equipped with renewal air intake fan, vitiated air exhaust fan, filtering system, passive heat recovery unit and bypass damper for free-cooling.
HRV-DX-2		Ducted indoor unit equipped with renewal air intake fan, vitiated air exhaust fan, filtering system, passive heat recovery unit, VRF direct expansion coil and bypass damper for free-cooling.
HRV-DXL-2		Ducted indoor unit equipped with renewal air intake fan, vitiated air exhaust fan, filtering system, passive heat recovery unit, VRF direct expansion coil and bypass damper for free-cooling.
ZEPHIR³ (See the Applied section)		Single full inverter unit for primary air with active thermodynamic circuit and 100% renewal with purified and air-conditioned outdoor air.
AQX VRF Standard		Air handling units in 7 predefined configurations combined with VRF systems.
AQX VRF Custom		Fully configurable air handling units combined with VRF systems.

Applications	Key features
✓ Stand-alone residential and centralized ✓ Restaurants (small, medium-sized) ✓ Offices (small, medium-sized) ✓ Bars ✓ Banking agencies ✓ Medical / dental practices ✓ Schools ✓ Shops ✓ Hotels	✓ Wide range of air flow rates available ✓ Installation flexibility ✓ Light and compact unit ✓ CO_2 sensor included as standard ✓ Free-cooling ✓ F7 supply filters (optional)
✓ Banking agencies with thermo-hygrometric control ✓ Executive offices ✓ Inpatient rooms and outpatient clinics ✓ Nursing homes ✓ Historical buildings (libraries, museums, etc.) ✓ Hotels	✓ Installation flexibility ✓ F9 supply filters ✓ Direct expansion coil ✓ Free-cooling ✓ Bioxigen purification system included as standard
✓ Banking agencies with thermo-hygrometric control ✓ Executive offices ✓ Inpatient rooms and outpatient clinics ✓ Nursing homes ✓ Historical buildings (libraries, museums, etc.) ✓ Hotels	✓ Installation flexibility ✓ F7 supply filters ✓ Direct expansion coil ✓ Free-cooling ✓ Bioxigen purification system (optional)
✓ Schools ✓ Office blocks ✓ Commercial buildings ✓ Public buildings ✓ Nursing homes ✓ Gymnasiums ✓ Medical clinics	✓ Active Thermodynamic Recovery ✓ Inverter compressors ✓ Precise control of temperature and humidity conditions at air intake in both heating and cooling mode ✓ Additional available capacity for indoor air conditioning ✓ Standard electronic filters ✓ Modulating re-heating, free heat from condenser ✓ Free-cooling ✓ All primary air devices already on board, for a simplified system design
✓ Goods sorting warehouses ✓ Office blocks ✓ Commercial buildings ✓ Healthcare facilities ✓ Industry ✓ Process industry	✓ Complete handling of air at high flow rates ✓ Direct expansion coil ✓ F7 supply filters ✓ Rotary enthalpy recovery unit ✓ Mixing damper with integrated CO_2 sensor ✓ Free-cooling
✓ Goods sorting warehouses ✓ Office blocks ✓ Commercial buildings ✓ Healthcare facilities ✓ Industry ✓ Process industry	✓ Complete handling of air at high flow rates ✓ Direct expansion coil ✓ Maximum degree of customisation for fans, heat recovery units, filters, humidifiers, pre and post heating sections, internal sheet metal panels, sound attenuators, etc.

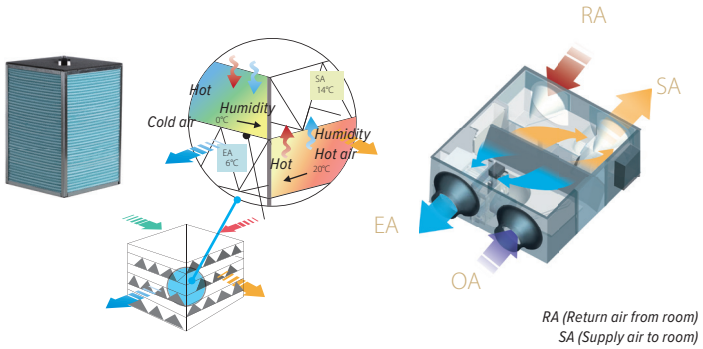
HRV-2B HEAT RECOVERY VENTILATOR

HRV-2B-Mi D200÷D2000



ENHANCED EFFICIENCY

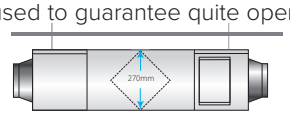
The heat recovery ventilator (HRV) can greatly reduce energy losses and room temperature fluctuations caused by the ventilation process. The HRV's strong performance is a result of the advanced technology incorporated into its design. The heat exchanger core is made of specially treated paper which gives enhanced temperature and humidity control. Exchange efficiencies are over 80%.



RA (Return air from room)
SA (Supply air to room)
EA (Exhaust air to outdoors)
OA (Fresh air from outdoors)

FLEXIBILITY AND LOW NOISE

Heights starting from as little as 272 mm and weights from as little as 53 kg mean that the HRV can be easily installed even where space is limited.
Soundproofing is used to guarantee quite operation.



ECO-DESIGN

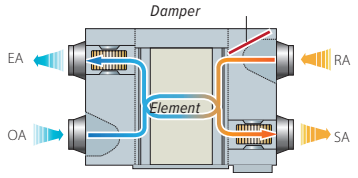
The unit complies with regulation (EU) 1253/2014 requirements for ventilation units.

ErP

MULTIPLE OPERATING MODES

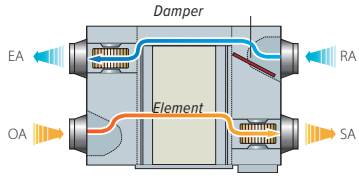
Heat exchange mode

The flows of incoming and outgoing air pass close to each other, allowing heat transfer between the two channels. During summer, incoming air is cooled by the indoor air being exhausted and in winter, incoming air is warmed.



Bypass mode

In mild climates or seasons, where temperature and humidity differences between indoors and outdoors are small, the HRV can work as a conventional ventilation fan bypassing the heat exchanger core. In standard bypass mode the supply and exhaust fans run at the same speed.



Air supply mode

Air supply mode is a form of bypass mode where the supply fan is set to run faster than the exhaust fan, which is useful in mild climate installations with high fresh air ventilation requirements.

Exhaust mode

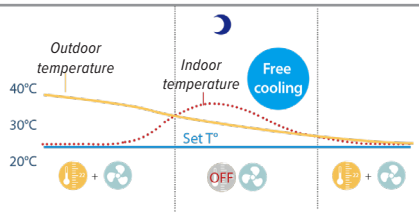
Exhaust mode is a form of bypass mode where the exhaust fan is set to run faster than the supply fan, which is useful in mild climate installations with large amounts of exhaust air to be expelled.

Auto mode

The controller chooses heat exchange mode or bypass mode according to the temperature difference between outdoors and indoors. Supply and exhaust fans speeds are regulated automatically.

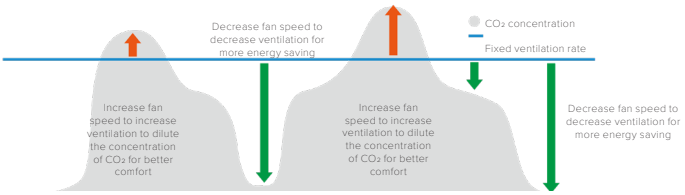
FREE COOLING MODE

During Summer, when outdoor temperature is lower than indoor temperature like at night, free cooling mode allows to cool down the rooms reducing the running costs.



INTEGRATED CO_2 SENSOR

The built-in CO_2 sensor allows to activate a specific function, which automatically manages the unit regulating the fan speed as a function of the detected indoor air quality. In this way, the proper air renewal is automatically provided depending on the actual needs.



HIGH FILTRATION GRADE

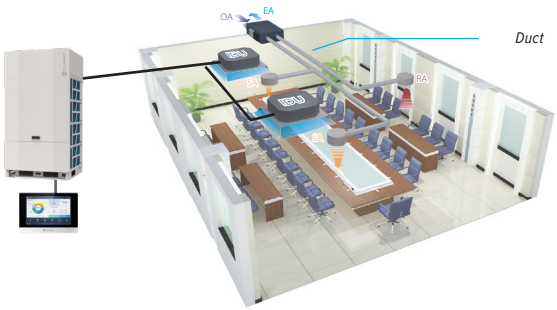
In addition to the G4 filter included as standard in the unit, where required it is possible to install a F7 filter available as an accessory to maximize the indoor air quality.

SMART INPUT/OUTPUT CONTACTS

Practical connectors are available as standard on the electronic board of the unit to allow field operations with other devices according to user needs. The available contacts are remote on/off and negative pressure operation forcing as inputs to the unit. And alarm, fan status, and preheating activation as outputs.

UNIFIED AND FLEXIBLE CONTROL

HRV unit can now be managed by the same wired controller available for other VRF second generation indoor units, with the possibility to manage further advanced modes (including interlock with other indoor units, group control and weekly schedule).
In addition to the independent control by its own remote controller, the unit can be managed also at a system level along with other indoor units via second generation centralized controller.



technical data

HRV-2B-Mi D200÷D2000

HRV-2B

Size		HRV-2B-Mi	D200	D300	D400	D500	D800	D1000	D1500	D2000
Ventilation	Airflow	m³/h	200	300	400	500	800	1000	1500	2000
	Maximum static pressure	Pa	100	90	100	90	140	160	180	200
	Filtration class on the supply side EN 779	-	G4	G4	G4	G4	G4	G4	G4	G4
Recovery efficiency	Temperature exchange efficiency (1)	%	79,5	75,5	77,7	80,6	78,7	82,8	75,5	77,2
	Enthalpy exchange efficiency (1)	%	75,0	72,1	73,5	74,0	72,3	76,0	69,4	74,7
Power input		W	70	100	110	150	320	380	680	950
Sound pressure level (2)(3)		dB(A)	33/29.5/25.5	36.5/33.5/30	36.5/32/28	36/30.5/24.5	42/39/34	44/39/33.5	51.5/46.5/41.5	53/48.5/42.5
Dimensions (Width x Height x Depth)		mm	1195x272x801	1195x272x914	1276x272x1204	1311x390x1106	1311x390x1286	1311x390x1526	1740x615x1375	1811x685x1575
Weight		kg	53,6	59,0	71,5	74,4	80,0	90,0	181,5	208,5
Air connection dimensions		mm	Ø144	Ø144	Ø198	Ø244	Ø244	Ø244	346x326	346x326
Operating temperature range (4)		°C	-7 ~ 43	-7 ~ 43	-7 ~ 43	-7 ~ 43	-7 ~ 43	-7 ~ 43	-7 ~ 43	-7 ~ 43
Power supply		V\Ph\Hz	220-240/1~/50							

For HRV-2B-Mi D200~D2000 3 fan speeds are available (Hi, Med, Low).

The parameters in the table are measured at high fan speed and with standard G4 filter, please refer to the technical manual for data at other conditions.

(1) Gr. D200: Indoor air temperature 20°C DB/12°C WB; Outdoor air temperature 7°C DB.
Gr. D300-D2000: Indoor air temperature 25°C DB/14°C WB; Outdoor air temperature 5°C DB

(2) Sound levels are measured 1,5 m below the center of the unit in an anechoic room.

(3) Data refer to the 3 fan speeds, in descending order.

(4) DB temperatures with 80% RH or less.

accessories

WDC-120G/WK	Wired controller
HRV200(B)-GLW(F7)	F7 filter (size D200)*
HRV300(B)-GLW(F7)	F7 filter (size D300)*
HRV400(B)-GLW(F7)	F7 filter (size D400)*
HRV500(B)-GLW(F7)	F7 filter (size D500)*
HRV800(B)-GLW(F7)	F7 filter (size D800)*
HRV1000(B)-GLW(F7)	F7 filter (size D1000)*
HRV1500(B)-GLW(F7)	F7 filter (size D1500)*
HRV2000(B)-GLW(F7)	F7 filter (size D2000)*

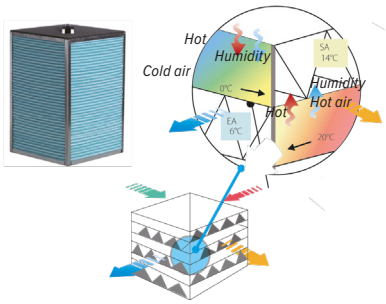
*2x F7 filters are necessary for sizes D200-D300, 4x F7 filters are necessary for sizes D400-D2000

HRV-DX-2

HRV-DX-2-XMI D500÷D1000

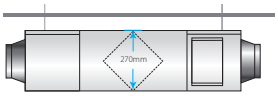
ENHANCED EFFICIENCY

Heat recovery ventilator with coil DX HRV-DX-2 combines technological advantages of enthalpic energy exchange between exhaust and supply air through a special core realized with pre-treated paper and of DX coil connected to VRF system to which is connected. Thus, the unit can both heat or cool and ventilate the rooms, improving both comfort and energy saving.



INSTALLATION FLEXIBILITY

Due to a minimum height of 270 mm, the unit can be installed in limited false cellings. As components are cabled and included in the unit, installation is simple as for other VRF second generation indoor units since it is sufficient to perform electric and refrigerant connections with the system.



HIGH FILTRATION GRADE AND AIR QUALITY

The healthiness of the air and minimum dirtiness of the exchanger are guaranteed by G3 (ISO 16890 Coarse 50%) and F9 (ISO 16890 ePM2.5 95%) filters on the fresh air section and G3 (ISO 16890 Coarse 50%) on the exhaust, to increase the quality of the air introduced into the environment. For maximum healthiness of the air the Bioxigen® purification system is included in the unit, which allows, through a controlled bipolar ionisation process, multiple benefits such as an antibacterial effect and the removal of odours, pollutants, mould and pollen.

BYPASS FOR FREE COOLING

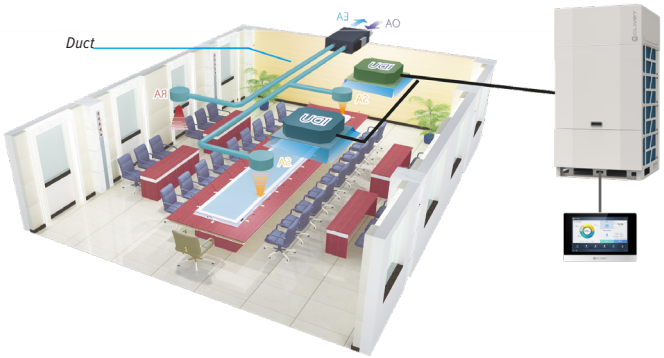
During summer, when external temperatures are lower than internal, air is diverted , excluding the recovery, directly to the ambient, reducing the requested load of the installation and enhancing energy efficiency.

3 FAN SPEEDS

The unit is equipped with DC fan with 3 speeds available optimizing the air flow rate according to the requests.

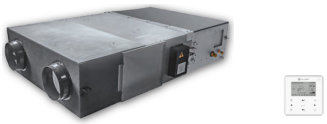
CONTROLLER INCLUDED AND FLEXIBLE CONTROL

Wired controller to manage the unit is supplied with the unit.. Moreover, the unit is totally compatible with VRF control systems via centralized controls or BMS together with other indoor units of the system.



technical data

HRV-DX-2-XMI D500÷D1000



HRV-DX-2

Size	HRV-DX-2-XMI		D500	D1000
Ventilation	Airflow	m^3/h	500	1000
	Nominal static pressure.	Pa	90	115
	Filtration class on the supply side EN 779	-	F9	F9
	Filtration class on the supply side EN ISO 16890	-	ePM2.5 95%	ePM2.5 95%
Cooling (1)	Capacity	kW	3,0	5,8
	Power input	W	150	390
	Temperature exchange efficiency	%	76	76
	Enthalpy exchange efficiency	%	63	60
Heating (2)	Capacity	kW	2,5	5,2
	Power input	W	150	390
	Temperature exchange efficiency	%	76	76
	Enthalpy exchange efficiency	%	67	62
Pipe connections	Liquid	mm	Ø6.35	Ø6.35
	Gas	mm	Ø12.7	Ø12.7
Sound pressure level (3)		dB(A)	39	43
Dimensions (Width x Height x Depth)		mm	1664x270x955	1920x388x1290
Weight		kg	90	105
Air connection diameters		mm	200	250
Operating temperature range (4)		°C	-15 ~ 40	-15 ~ 40
Power supply		V\Ph\Hz	220-240/1~/50	

(1) Powers calculated with inlet coil air 28,5°C DB, 50% UR. Exchange efficiencies calculated with outdoor temperature 32°C DB 50%UR; inlet air 26°C DB 50% UR.

(2) Powers calculated with inlet coil air 13°C DB, 40% UR. Exchange efficiencies calculated with outdoor temperature-5°C DB 80%UR; inlet air 20°C DB 50% UR.

(3) Sound values are measured at a position 1m from service side of casing, with ducted supply, exhaust, return and fresh air, at nominal conditions.

(4) For outdoor temperatures below -5°C it is recommended to equip the unit with the pre-heater.

accessories

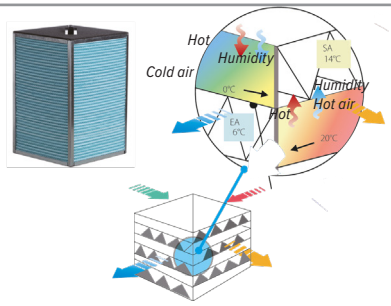
WDC-86E/KD	Wired controller (already supplied with standard version)
WDC-120G/WK	Wired controller
BIOX-DX	Bioxigen purification system® (already supplied with standard version)
PRE-DX-500	Electric pre-heater (size D500)
PRE-DX-1000	Electric pre-heater (size D1000)

HRV-DXL-2

HRV-DXL-2-XMI D1500÷D3100

ENHANCED EFFICIENCY

Heat recovery ventilator with coil DX HRV-DXL-2 combines technological advantages of enthalpic energy exchange between exhaust and supply air through a special core realized with pre-treated paper and of DX coil connected to VRF system to which is connected. Thus, the unit can both heat or cool and ventilate the rooms, improving both comfort and energy saving.



WIDER RANGE

In addition to the units of the HRV-DX-2 series with 500 and 1000 m³/h, the HRV-DXL-2 series can treat air flow rates up to 3100 m³/h, further expanding the offer of air handling units in combination with Clivet VRF systems.

HIGH FILTRATION GRADE AND AIR QUALITY

The healthiness of the air and the minimum dirtiness of the exchanger are guaranteed by filters F7 (ISO 16890 ePM1 55%) on the fresh air section and M5 (ISO 16890 ePM10 55%) on the exhaust, to increase the quality of the air introduced into the environment. For maximum air healthiness, the Bioxigen® purification system is available as an accessory, which allows, through a controlled bipolar ionisation process, multiple benefits such as an antibacterial effect and the removal of odours, pollutants, mould and pollen.

BYPASS FOR FREE COOLING

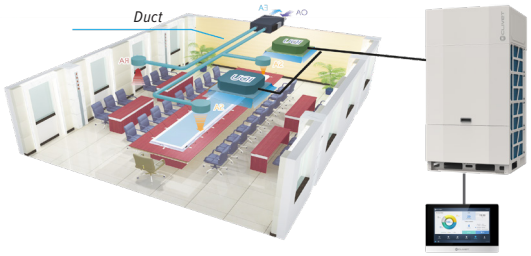
During summer, when external temperatures are lower than internal, air is diverted , excluding the recovery, directly to the ambient, reducing the requested load of the installation and enhancing energy efficiency.

3 FAN SPEEDS

The unit is equipped with DC fan with 3 speeds available optimizing the air flow rate according to the requests.

CONTROLLER INCLUDED AND FLEXIBLE CONTROL

Wired controller to manage the unit is supplied with the unit.. Moreover, the unit is totally compatible with VRF second generation control systems via centralized controls or BMS together with other indoor units of the system.



technical data

HRV-DXL-2-XMI D1500÷D3100

HRV-DXL-2

Size	HRV-DXL-2-XMI		D1500	D2300	D3100
Ventilation	Airflow	m^3/h	1500	2300	3100
	Nominal/maximum static pressure	Pa	190 / 520	210 / 425	190 / 370
	Filtration class on the supply side EN 779	-	F7	F7	F7
	Filtration class on the supply side EN ISO 16890	-	ePM1 55%	ePM1 55%	ePM1 55%
Cooling (1)	Capacity	kW	9,9	14,2	19,3
	Power input	kW	0,62	1,31	1,50
	Temperature exchange efficiency	%	60,1	60,2	57,4
	Enthalpy exchange efficiency	%	58,3	58,5	52,5
Heating (2)	Capacity	kW	8,6	12,2	17,1
	Power input	kW	0,62	1,31	1,50
	Temperature exchange efficiency	%	73,0	73,2	71,4
	Enthalpy exchange efficiency	%	62,5	62,7	55,5
Pipe connections	Liquid	mm	Ø9.53	Ø9.53	Ø9.53
	Gas	mm	Ø15.9	Ø15.9	Ø15.9
Sound pressure level (3)		dB(A)	53	59	58
Dimensions (Width x Height x Depth)		mm	2535x670x1290	2535x670x1290	2635x670x1400
Weight		kg	230	250	270
Air connection dimensions		mm	300x410, 230x260	500x410, 330x290	400x510, 330x285
Operating temperature range (4)		°C	-15 ~ 45	-15 ~ 45	-15 ~ 45
Power supply		V\Ph\Hz	220-240/1~/50		

(1) Powers calculated with inlet coil air 28,5°C DB, 50% UR. Exchange efficiencies calculated with outdoor temperature 32°C DB 50%UR; inlet air 26°C DB 50% UR.

(2) Powers calculated with inlet coil air 13°C DB, 40% UR. Exchange efficiencies calculated with outdoor temperature-5°C DB 80%UR; inlet air 20°C DB 50% UR.

(3) Sound values are measured at a position 1m from service side of casing, with ducted supply, exhaust, return and fresh air, at nominal conditions.

(4) For outdoor temperatures below -5°C it is recommended to equip the unit with the pre-heater.

accessories

WDC-86E/KD	Compact wired controller (already supplied with standard version)
WDC-120G/WK	Wired controller

configurations

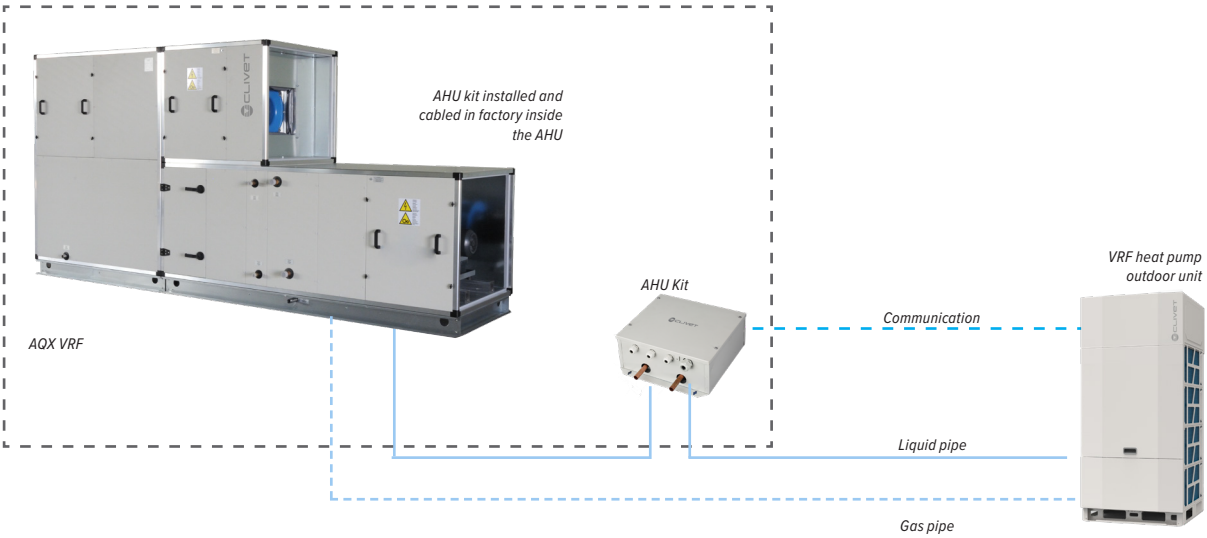
Version	Clivet code	Bioxigen purification system®	Electric pre-heater pre-heating	Description
HRV-DXL-2-XMi D1500	AAWPG60001	-	-	Standard unit
	AAWPG60002	•	-	Unit with Bioxigen purification system® included
	AAWPG60003	-	•	Unit with electric pre-heater included
	AAWPG60004	•	•	Unit with Bioxigen purification system® and electric pre-heater included
HRV-DXL-2-XMi D2300	AAWPK60001	-	-	Standard unit
	AAWPK60002	•	-	Unit with Bioxigen purification system® included
	AAWPK60003	-	•	Unit with electric pre-heater included
	AAWPK60004	•	•	Unit with Bioxigen purification system® and electric pre-heater included
HRV-DXL-2-XMi D3100	AAWPK70001	-	-	Standard unit
	AAWPK70002	•	-	Unit with Bioxigen purification system® included
	AAWPK70003	-	•	Unit with electric pre-heater included
	AAWPK70004	•	•	Unit with Bioxigen purification system® and electric pre-heater included

AQX VRF

AQX VRF 3000÷20000

EFFICIENT AND FLEXIBLE

Direct expansion coil air handling units combine fresh air ventilation with the flexibility and air conditioning efficiency typical of Clivet VRF systems.
The unit is easy to install: thanks to the dedicated kit to manage air handling unit pre-cabled and included in AQX VRF, it is sufficient to connect it to VRF system from refrigerant and electrical point of view.



ONE SOLUTION, TWO POSSIBLE CONFIGURATIONS

Designed to control return air temperature, the solution is available in two versions:

- AQX VRF standard ➔ 7 pre-defined configurations (3000, 5000, 7500, 10000, 12500, 15000, 20000 m^3/h);
- AQX VRF custom ➔ completely configurable based on specific project needs (airflow range 500-48000 m^3/h, capacity 2,2-224 kW), with multiple accessories available.

AQX VRF air handling units are available in single configuration connected in a 1-to-1 combination to a dedicated VRF outdoor unit (A), or in multiple configuration with more AQX VRF units connected to the same VRF outdoor unit (B), or in mixed configuration with other VRF indoor units all managed by the same VRF outdoor unit (C).

A

B

C

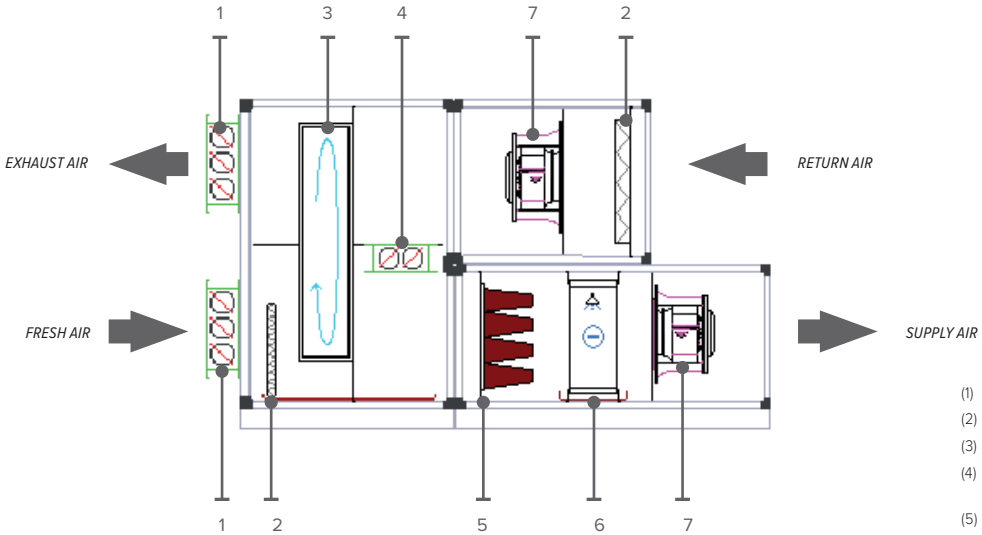
If managed with other VRF indoor units, AQX VRF capacity must not exceed 30% of that of the outdoor unit

AQX VRF Standard

AQX VRF STANDARD COMBINATIONS WITH VRF OUTDOOR UNITS

AQX VRF standard units are designed to be coupled with Clivet VRF outdoor units with the following combinations:

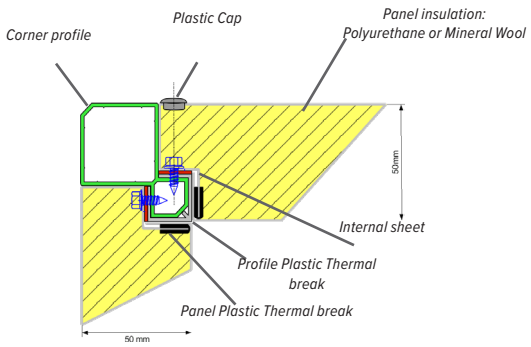
Size	AQX VRF	3000	5000	7500	10000	12500	15000	20000
Outdoor unit		MSAN6-XMi 200T	MSAN6-XMi 260T MSAN8-X 252T CVT8-X 252T	MSAN8-X 400T CVT8-X 400T	MSAN8-X 500T CVT8-X 500T	MSAN8-X 615T CVT8-X 615T	CVT8-X 730T	CVT8-X 850T



(1) Damper
(2) Synthetic G4 (ISO 16890 Coarse 60%) filter
(3) Rotary enthalpic heat recovery
(4) Mixing damper regulated by integrated CO_2 sensor
(5) Rigid bag F7 (ISO 16890 ePM1 50%) filter
(6) Direct expansion coil for heating and cooling
(7) Plug fan EC brushless fan

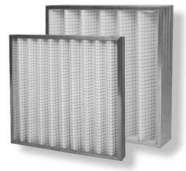
STRUCTURE

Frame is composed of profiles having 50x50 mm sections for its light weight and extra corrosion resistance, ensuring the best thermal break. Profiles are double chamber type so that fixing screws are totally to have the maximum seal.
Closing panels are double skin type, with double sheet steel and insulation through polyurethane foam with gasket on all external perimeter for thermal break.



FILTERS

In order to provide quality of supply air, filter section is composed of synthetic G4 (ISO 16890 Coarse 60%) filters placed on exhaust and outdoor air sections and F7 (ISO 16890 ePM1 50%) rigid bag filter on supply air.



FANS

Supply and exhaust air fans are plug fan type, directly coupled to high efficiency EC brushless motor in order to ensure an external static pressure of 300 Pa.

ROTARY ENTHALPIC HEAT RECOVERY

Energy recovery from indoor exhaust air is ensured by a rotary enthalpic heat recovery: in the first half of rotation, the sensible and latent heat is transferred to the heat-adsorbing materials of the wheel and gives that energy in the second part of rotation to the side that has lower energy.
The rotary wheel is composed of a special hygroscopic aluminum matrix designed with a special distribution to increase sensible and latent heat transfer area and efficiency.

MIXING DAMPER WITH INTEGRATED CO_2 SENSOR

In addition to bypass damper, AQX VRF air handling units are equipped as standard with a mixing damper with integrated CO_2 sensor. As a result, fresh air airflow is mixed with exhaust air from indoor in a variable percentage depending on environmental air quality measured in CO_2 ppm.
Besides a better energy efficiency, this system facilitates system start-up, accelerating steady operation of the plant.

INTEGRATED ELECTRICAL BOX

Electrical panel, complete with VRF outdoor unit control interface, is included and pre-cabled inside the AQX VRF unit, strongly simplifying installing operations.

AQX VRF STANDARD

Size		AQX VRF	3000	5000	7500	10000	12500	15000	20000
Ventilation	Airflow	m³/h	3000	5000	7500	10000	12500	15000	20000
	Maximum static pressure.	Pa	300	300	300	300	300	300	300
	Filtration class on the supply side EN 779	-	F7	F7	F7	F7	F7	F7	F7
	Filtration class on the supply side EN ISO 16890	-	ePM1 50%	ePM1 50%	ePM1 50%	ePM1 50%	ePM1 50%	ePM1 50%	ePM1 50%
Cooling (1)	Capacity	kW	17,5	26	40	50	61,5	73	85
	Power input	kW	13	21,8	34,9	44,4	54,3	66,6	87,4
	Temperature exchange efficiency	kW	2,1	3,3	5,1	6,6	7,9	9,5	12,7
	Enthalpy exchange efficiency	%	73,3	73,5	77,9	73,9	73,4	74	73,5
Heating (2)	Capacity	kW	17,5	26	40	50	61,5	73	85
	Power input	kW	24,4	40,9	65,1	82,5	101,9	123,9	136,7
	Temperature exchange efficiency	kW	2,1	3,3	5,1	6,6	7,9	9,5	12,7
	Enthalpy exchange efficiency	%	73,3	73,5	77,9	73,9	73,4	74	73,5
Energy class		-	A+	A+	A+	A	A	A	A
Minimum air flow		m³/h	2400	4000	6000	8000	10000	12000	16000
Maximum air flow		m³/h	3000	5000	7500	10000	12500	15000	20000
Dimensions (Width x Height x Depth) (3)		mm	2790x1580x1070	2840x1980x1320	3040x1930x1570	3140x2130x1820	3290x2380x1970	3140x2530x2170	3290x2680x2470
Weight		kg	484	662	772	931	1131	1267	1567
Power supply		V/Ph/Hz	400/3~/50						

(1) Indoor temperature 27°C DB/50% R.H.; Outdoor temperature 35°C DB/50% R.H.

(2) Indoor temperature 20°C DB/50% R.H.; Outdoor temperature -5°C DB/80% R.H.

(3) Height including base

(4) Some technical specifications may vary if components are updated. Please refer to the AHU data sheet supplied with your order.

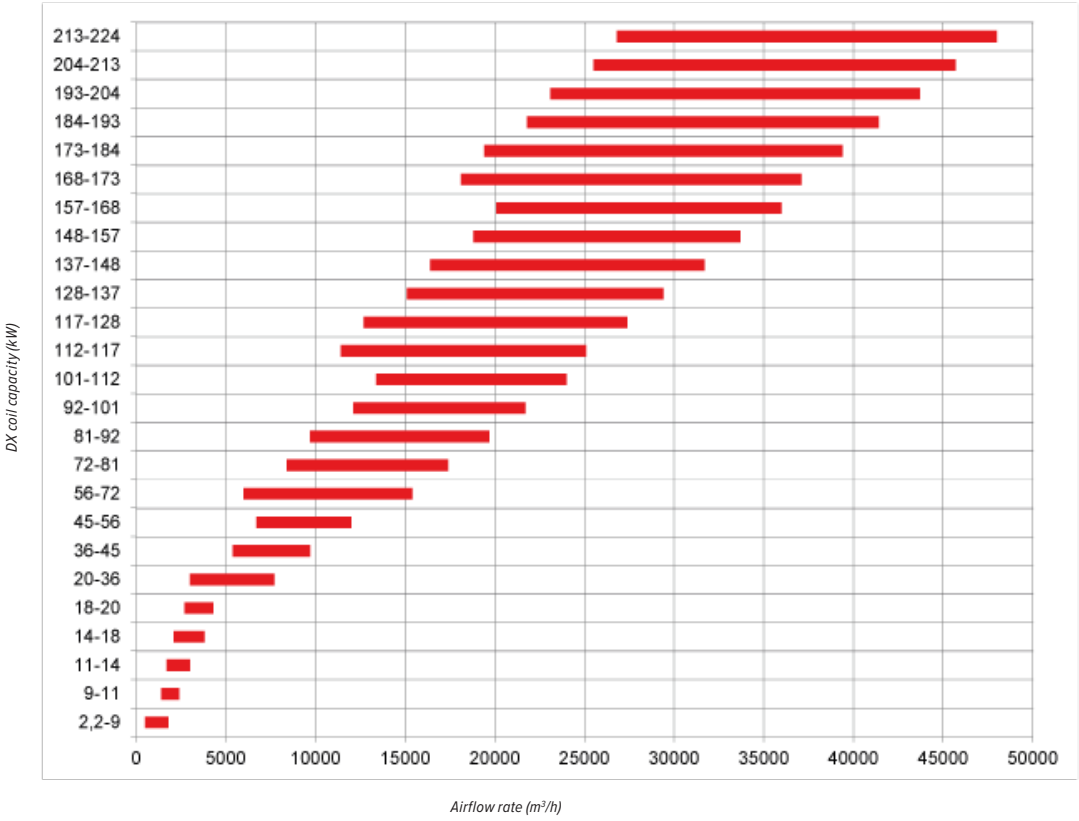
AQX VRF Custom

THE MOST FLEXIBLE AIR HANDLING UNITS THAT CAN BE COMBINED WITH VRF

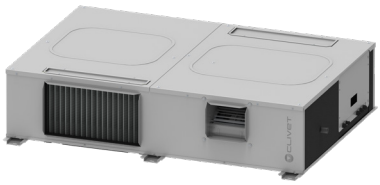
In addition to AQX VRF standard version, multiple variations are available with direct expansion coil capacity ranging from 2,2 to 224 kW and airflow rate between 1500 and 48000 m³/h, in combination with various accessories depending on specific design needs.

Possible customizations can concern:

- Fans and motors
- Heat recovery section
- Filters
- Humidifiers
- Pre-heating, post-heating auxiliary sections
- Internal panels
- Silencers
- Additional accessories



APPLIED products for air renewal

Name	Image	Description
Fresh Large EVO		Indoor unit equipped with renewal air intake fan, vitiated air exhaust fan, filtering system, thermodynamic heat recovery and DC inverter Rotary compressor.
ZEPHIR³		Single full inverter unit for primary air with active thermodynamic circuit and 100% renewal with purified and air-conditioned outdoor air.
SAHU		Air handling units for indoor installation for hydronic air conditioning (2 or 4 pipes) or direct expansion air conditioning that can be connected to VRF systems.
AQX		Suitable for both residential and light commercial applications.
CLA		Fully configurable air handling units for all markets that require characteristics different from those envisaged by Eurovent certification.

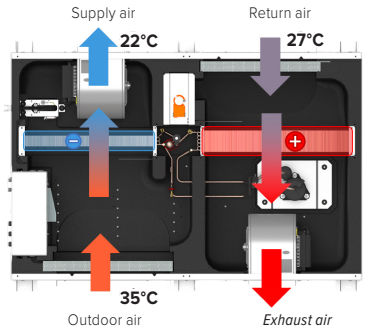
Applications	Key features
✓ Small business ✓ School buildings ✓ Offices ✓ Gymnasiums ✓ Medical clinics	✓ Thermodynamic recovery ✓ Refrigerant R32 ✓ Electronic filters with iFD technology (ISO 16890 ePM1 90%) (optional) ✓ Double set of airflows ✓ Extended working limit ✓ Suitable for both residential and light commercial applications
✓ Schools ✓ Office blocks ✓ Commercial buildings ✓ Public buildings ✓ Nursing homes ✓ Gymnasiums ✓ Medical clinics	✓ Thermodynamic recovery ✓ Inverter compressors ✓ Precise control of temperature and humidity conditions at air intake in both heating and cooling mode ✓ Additional available capacity for indoor air conditioning ✓ Standard electronic filters with iFD technology (ISO 16890 ePM1 90%) ✓ Modulating re-heating, free heat from condenser ✓ Free-cooling ✓ All primary air devices already on board, for a simplified system design
✓ Schools / universities ✓ Public buildings ✓ Offices (medium and large-sized) ✓ Theatres, auditoriums, cinemas ✓ Restaurants (medium and large-sized) ✓ Open spaces ✓ Hotels	✓ Horizontal or vertical type units ✓ Wide range of filters ✓ Easy removal of the panels to access the inner components ✓ Compact size ✓ Large selection of accessories ✓ Section of heating elements of different power ratings
✓ Goods sorting warehouses ✓ Office blocks ✓ Commercial buildings ✓ Healthcare facilities ✓ Industry ✓ Process industry	✓ Complete handling of air at high flow rates ✓ Compatibility with water, steam and VRF systems ✓ Maximum degree of customization for fans, heat recovery units, filters, humidifiers, pre and post-heating sections, internal baffles, silencers, etc.
✓ Goods sorting warehouses ✓ Office blocks ✓ Commercial buildings ✓ Healthcare facilities ✓ Industry ✓ Process industry	✓ Complete handling of air at high flow rates ✓ Compatibility with water, steam and VRF systems ✓ Maximum degree of customization for fans, heat recovery units, filters, humidifiers, pre and post-heating sections, internal baffles, silencers, etc.

Fresh Large EVO

CISDN-Y EF 1 S

ACTIVE THERMODYNAMIC RECOVERY

Fresh Large EVO uses active thermodynamic recovery technology to supply air with a temperature above room temperature during heating and below during cooling. In this way, in addition to the ventilation load, it is also able to meet part of the building's heating and cooling needs.



INVERTER TECHNOLOGY

Inverter technology allows the unit to operate even at reduced power and ensure high performance throughout the entire year.

WIDE OPERATING RANGE

Thanks to inverter technology, the operating range is particularly expanded. In heating mode, the unit is able to deliver neutral air to the environment even at -20°C of outside temperature and without the need for auxiliary thermal integrations.

R32 REFRIGERANT

The refrigeration circuit uses environmentally friendly R32 refrigerant which has:
- Low GWP (Global Warming Potential)
- Better performance in extreme conditions
- Low refrigerant charge
- High heat transfer coefficient

NO CROSS CONTAMINATION

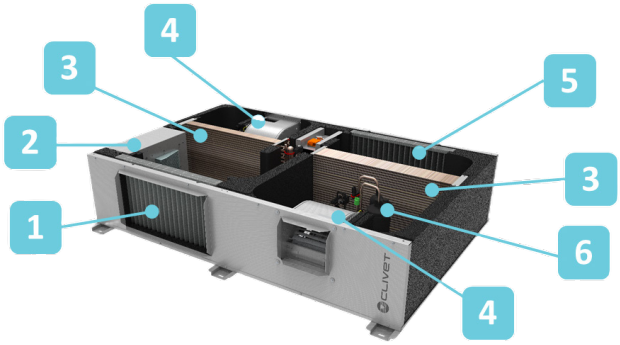
Air inlet and exhaust sections are complitely separated.

MULTIPLE SILENT MODES

To reduce noise, it is possible to set the Silent and Supersilent modes from an external signal or from the HMI.

SIMPLIFIES THE SYSTEM AND INCREASES EFFICIENCY

Thanks to the monobloc construction, all the components are already enclosed within the machine. Moreover, the energy generated by the active thermodynamic recovery reduces the potential and therefore the cost of the integrated air conditioning system.



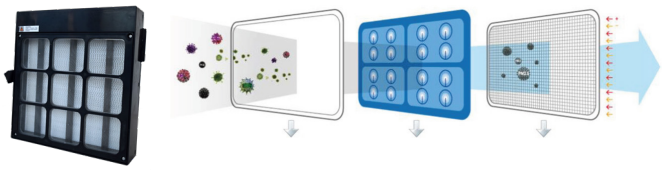
1. Outdoor air filter
2. Electric Control Box Case
3. Air-gas finned exchanger
4. DC inverter fan with constant flow
5. Exhausted air filter
6. Rotary DC inverter compressor

INSTALLATION FLEXIBILITY

The unit is optimized to facilitate floor or ceiling installation. The EEP lightweight structure facilitates handling and ensures excellent acoustic and thermal insulation performance. Moreover, with a height of only 300mm, the first size easily adapts to residential applications as well.

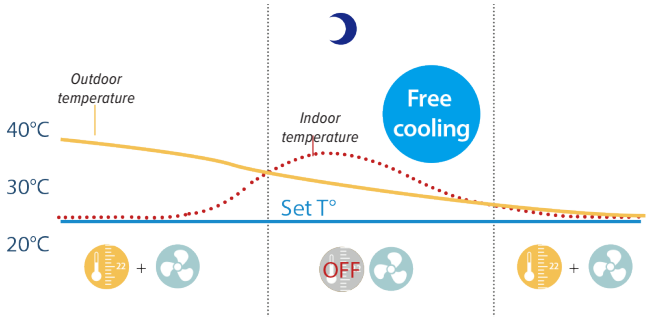
ELECTRONIC FILTRATION WITH IFD TECHNOLOGY (OPTIONAL)

High performance electronic filters with iFD technology can be provided for optimal air purification:
- Filtration degree equivalent to conventional filters E10 (ISO 16890 ePM1 90%)
- Extremely low pressure drop
- Easy maintenance and regeneration



FREE COOLING

During summer, when it is warm outdoors, the thermodynamic circuit is not activated. This means that the air, once filtered, is introduced directly into the room, reducing the thermal load of the system.



SECOND FLOW SET

Through an external signal, it is possible to enable a second air flow rate value. It is ideal for applications with independent rooms served by a single unit, such as school classrooms characterized by different occupancy profiles.

CONNECTIVITY

For easy management both in residential and commercial applications, the unit is integrated into the main Clivet supervision systems: Control4 NRG, Clivet EYE, INTELLIAIR, platforms with Modbus protocol (provided as standard), and centralized VRF second generation control systems.

DEDICATED ENVIRONMENTAL CONDITIONS CONTROL.

The remote ambient thermostat with ambient temperature and humidity sensor connected to the unit allows regulating:
Desired temperature and humidity in the environment.
- Switch the unit ON/OFF
- Manual or automatic change of operation mode (Heating, cooling, ventilation).
- Diagnostic management with specific error code for error type.

versions and configurations

INSTALLATION:

II	Indoor installation (Standard)
FDOWN	Downward filter access (Standard)
FTOP	Upward filter access

AERAULIC CIRCUIT

M5S	M5 filters on supply air (ISO 16890 ePM1 50%) (Standard)
M5E	M5 filters on exhaust air (ISO 16890 ePM1 50%) (Standard)

CONNECTIVITY:

CMSC9	Serial communication module for Modbus supervisor (Standard)
VRFG	VRF Gateway (Standard)

HYDRAULIC CIRCUIT:

CDP	Condensate drain pump on board (Standard)

technical data

CISDN-Y EF 1 S SIZE1 ÷ SIZE3

Fresh Large EVO

Size	CiSDN-Y EF 1 S		Size 1	Size 2	Size 3
Ventilation	Airflow	m³/h	500	1000	2000
	Maximum static pressure (1)	Pa	250	300	280
	Filtration class on the supply side EN 779	-	M5	M5	M5
	Filtration class on the supply side EN ISO 16890	-	ePM10 65%	ePM10 65%	ePM10 65%
Cooling (2)	Capacity	kW	1,90	4,00	7,36
	Total power input	kW	0,33	0,97	1,81
	EER	-	5,74	4,12	4,06
Heating (3)	Capacity	kW	2,26	4,51	9,46
	Total power input	kW	0,38	0,82	2,01
	COP	-	5,88	5,48	4,71
Refrigeration circuits		Nr	1	1	1
Refrigerant charge		kg	0,5	0,8	1,7
No. of compressors		Nr	1	1	1
Type of compressors (4)		-	ROT	ROT	ROT
Minimum air flow		m³/h	350	700	1400
Maximum air flow		m³/h	800	1500	2500
Dimensions (Width x Height x Depth)		mm	1700x300x1250	1700x400x1250	1700x550x1250
Weight		kg	95	125	137
Air connection dimensions		mm	550x210, 230x110	550x300, 230x200	550x480, 230x200
Operating temperature range		°C	-20~45	-20~45	-20~45
Power supply		V\Ph\Hz	230/1~/50	230/1~/50	230/1~/50

(1) Static pressure available with standard unit

(2) Data according to EN 14511:2022. Outdoor air temperature 35°C D.B. / 24°C W.B. Exhaust air temperature 27°C D.B. / 19°C W.B. Supply air temperature 24°C. Available static pressure 50 Pa

(3) Data according to EN 14511:2022. Outdoor air temperature 7°C D.B. / 6°C W.B. Exhaust air temperature 20°C D.B. / 12°C W.B. Supply air temperature 20°C. Available static pressure 50 Pa

(4) ROT = rotary compressor

PRELIMINARY DATA

accessories

PVARC Variable air flow on supply and exhaust with CO_2 probe
PVARCV Variable air flow on supply and exhaust with CO_2+VOC probe
FIFD Electronic filters with iFD technology (ISO 16890 ePM1 90%)
IOTX IoT industrial module for cloud based interoperability & services
PCOSME Constant airflow in supply and exhaust (Standard)
PCOSME2 Double air flow sets (Standard)
PUE Predisposition for external humidifier control
ASOFX Antivibration kits for ceiling installation
APAVX Antivibration kits for floor installation

Accessories whose code ends with "X" are supplied separately

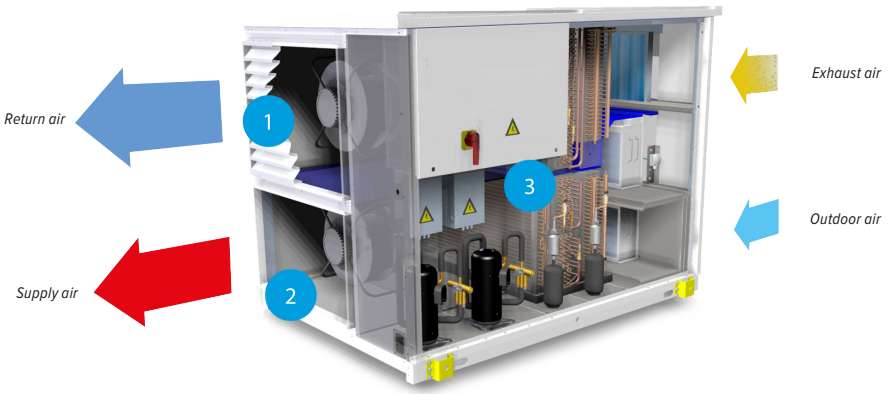
For compatibility between the various accessories, please refer to the dedicated Technical Bulletin or our website in the Systems and Products section.

ZEPHIR3

CPAN-XHE3 SIZE 1÷SIZE 6

THE WHOLE PRIMARY AIR SYSTEM IN A SINGLE STAND-ALONE SYSTEM

ZEPHIR3 contains all the components required to operate perfectly. These have already been optimised and tested by Clivet to ensure 100% efficient and reliable results.
Built-in controls allow operation with constant supply temperature, at maximum available capacity, at high airflow.
Central and local application.



(1) Air return and exhaust section with energy recovery
(2) Fresh air handling and inlet section
(3) Thermodynamic inverter and manage and control electronics section

EFFICIENT AND RELIABLE

Reversible heat pump technology:
- Recovers energy from exhaust air, a heat source that is favourable and steady over time
- The full inverter thermodynamic circuit generates capacity by increasing the energy contained in exhaust air
- The capacity produced satisfies most of the whole system's demand
- Eliminate the waste typical of central systems, such as pumping, storage, thermal loss on the pipework
- 30% saving on ventilation

SELF CONTAINED. EASY

It autonomously produces heating and cooling capacity to handle Primary Air:
- No connection to external heating and cooling stations
- Reduction in site work by 80%
- Industrial product optimized and tested for maximum reliability of results

CONTINUOUS HUMIDITY CONTROL

The quality of the air indoors depends largely on humidity: one of Primary Air system's main tasks is to control it. In summer mode, ZEPHIR³ uses a thermodynamic circuit to first attain the desired conditions of humidity, and then uses hot gas modulating post-heating to attain the desired temperature. This technology makes it possible to obtain the exact temperature conditions free of charge (no auxiliary heating system is necessary) and efficiently (it disposes of part of the heat attributed to the condenser). In winter mode, when required by the outdoor conditions and application of the system, ZEPHIR³ can humidify renewal air with the designated optional steam section with immersed electrodes or steam-powered section.

NO CROSS CONTAMINATION

A resistent steel wall keeps the two flows separate. All the technological components are located in individual compartments that can be easily accessed for routine maintenance.

COMPACT

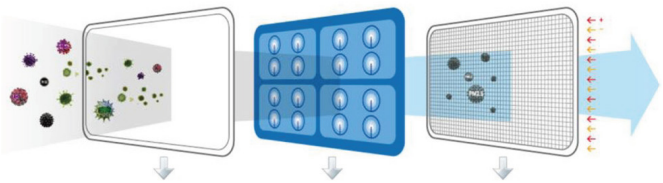
Requires 50% of the space of that of a modular primary air handling system Has already all the settings and power components.

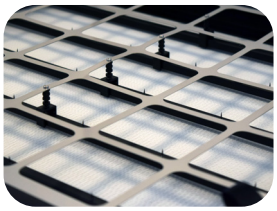
UNIFIED CONTROL ZEPHIR³+VRF

The VRF gateway option makes it easy to manage the ZEPHIR³ units and also the VRF systems from the CCM270 centralized touchscreen control.

ELECTRONIC FILTRATION WITH IFD TECHNOLOGY (STANDARD)

High performance electronic filters with iFD technology come as standard to ensure excellent levels of air filtration:
- Degree of filtration equivalent to that of conventional E10 filters (ISO 16890 ePM1 90%)
- Extremely low pressure drops
- Ease of maintenance and regeneration with washing





ZEPHIR³

Size			CPAN-XHE3	Size 1	Size 2	Size 3	Size 4	Size 5	Size 6
Operation with constant supply temperature	Ventilation	Airflow	m³/h	1300	2200	4600	7200	9500	12000
		Max external static pressure (supply)	Pa	630	630	630	600	420	630
		Max external static pressure (extraction)	Pa	630	630	630	630	540	630
		Filtration class on the supply side EN 779	-	E10	E10	E10	E10	E10	E10
		Filtration class on the supply side EN ISO 16890	-	ePM1 90%	ePM1 90%	ePM1 90%	ePM1 90%	ePM1 90%	ePM1 90%
	Cooling (1)	Total cooling capacity	kW	10,6	17,5	38,7	58,4	79,0	95,9
		Post-heating capacity	kW	2,70	4,20	10,9	14,9	21,3	22,9
		Compressor power input	kW	2,91	4,92	11,1	15,7	20,4	23,2
		EERc	-	4,57	4,41	4,47	4,67	4,91	5,12
	Heating (2)	Heating capacity	kW	5,93	10,0	21,0	32,9	43,4	54,9
		Compressor power input	kW	0,71	1,35	2,54	4,22	5,75	8,77
		COPc	-	8,38	7,45	8,28	7,80	7,55	6,26
Operation at maximum available capacity	Ventilation	Airflow	m³/h	1300	2200	4600	7200	9500	12000
		Max external static pressure (supply)	Pa	630	630	630	600	420	630
		Max external static pressure (extraction)	Pa	630	630	630	630	540	630
		Filtration class on the supply side EN 779	-	E10	E10	E10	E10	E10	E10
		Filtration class on the supply side EN ISO 16890	-	ePM1 90%	ePM1 90%	ePM1 90%	ePM1 90%	ePM1 90%	ePM1 90%
	Cooling (3)	Total cooling capacity	kW	10,6	17,5	38,7	58,4	79,0	95,9
		Futher available capacity to the environment	kW	3,57	5,67	14,0	19,8	27,7	30,9
		Compressor power input	kW	3,26	5,52	12,5	17,7	22,9	26,1
		EERc	-	3,25	3,18	3,10	3,31	3,45	3,68
	Heating (4)	Heating capacity	kW	10,5	17,8	37,1	58,2	76,8	96,9
		Futher available capacity to the environment	kW	4,41	7,47	15,6	24,4	32,3	40,7
		Compressor power input	kW	2,28	3,77	7,13	11,2	14,4	18,3
		COPc	-	4,61	4,72	5,21	5,20	5,33	5,29
Operation with high airflow	Ventilation	Airflow	m³/h	1900	3500	7000	9200	11500	14000
		Max external static pressure (supply)	Pa	630	470	630	455	345	615
		Max external static pressure (extraction)	Pa	630	530	630	535	400	630
		Filtration class on the supply side EN 779	-	E10	E10	E10	E10	E10	E10
		Filtration class on the supply side EN ISO 16890	-	ePM1 90%	ePM1 90%	ePM1 90%	ePM1 90%	ePM1 90%	ePM1 90%
	Cooling (5)	Total cooling capacity	kW	9,2	18,2	31,9	45,1	62,0	80,6
		Compressor power input	kW	1,56	3,38	4,46	6,97	13,8	17,8
		EERc	-	5,89	5,38	7,15	6,48	4,50	4,51
	Heating (6)	Heating capacity	kW	6,0	11,1	22,1	29,1	36,3	44,2
		Compressor power input	kW	0,54	1,31	2,48	3,11	3,40	5,44
		COPc	-	11,10	8,46	8,91	9,36	10,7	8,14
Refrigeration circuits			Nr	1	1	2	2	2	2
Refrigerant charge (7)			kg	4,3	5,6	19,0	24,0	28,0	37,5
No. of compressors			Nr	1	1	2	2	3	3
Type of compressors (8)			-	ROT inverter	SCROLL inverter	SCROLL inverter	SCROLL inverter	SCROLL inverter	SCROLL inverter
Minimum air flow (9)			m³/h	1000	1600	3300	5200	7500	9500
Maximum air flow (9)			m³/h	1900	3500	7000	9200	11500	14000
Sound pressure level (10)			dB(A)	60	61	61	60	62	64
Dimensions (Width x Height x Depth)			mm	1895x1025x950	1895x1625x950	2465x1810x1735	2465x2260x1735	2465x2260x2025	2465x2260x2330
Weight			kg	320	450	1070	1285	1450	1670
Operating temperature range (11)			°C	-7 ~ 35	-7 ~ 35	-7 ~ 35	-7 ~ 35	-7 ~ 35	-7 ~ 35
Power supply			V\Ph\Hz	400/3~/50					

Erp (Energy Related Products) European Directive, that includes the Commission delegated Regulation (EU) No 2016/2281 also known as Ecodesign Lot21, does not report this Product category.

The values of useful static pressure are referred to the Standard flow rate

EERc = Thermodynamic efficiency of the system in cooling; COPc = Thermodynamic efficiency of the system in heating

(1) Outdoor air temperature: 35°C D.B./ 24°C W.B; Exhaust air temperature: 26°C D.B. Supply air humidity ratio: 11g/kg; Supply air temperature: 24°C D.B.

(2) Outdoor air temperature: 7°C D.B./6.0°C W.B. Exhaust air temperature: 20°C D.B./ 12°C W.B; Supply air temperature: 20°C D.B.

(3) Outdoor air temperature: 35°C D.B./ 24°C W.B; Exhaust air temperature: 26°C D.B. Supply air humidity ratio: 11g/kg

(4) Outdoor air temperature: 7°C D.B./6.0°C W.B. Exhaust air temperature: 20°C D.B./ 12°C W.B; Supply air temperature: 30°C D.B.

(5) Outdoor air temperature: 35°C D.B./ 24°C W.B; Exhaust air temperature: 26°C D.B. Supply air temperature: 22°C D.B.

(6) Outdoor air temperature: 7°C D.B./6.0°C W.B. Exhaust air temperature: 20°C D.B./ 12°C W.B; Supply air temperature: 16°C D.B.

(7) Approximate values for standard units with possible variation +/-10%. Actual data can be found on the unit's serial number label.

(8) ROT = rotary compressor; SCROLL = scroll compressor

(9) In case of use with high air flow only the maximum flow rate value is possible

(10) he sound pressure level is referred at a distance of 1 m from the ducted unit surface operating in free field conditions. External static pressure 50 Pa. Please note that when the unit is installed in conditions different from nominal test conditions (e.g. near walls or obstacles in general), the sound levels may undergo substantial variations. Sound levels refer to unit with standard air flow rate

(11) The operating range in cooling mode is given for a relative humidity of 50%. At lower humidity higher temperatures can be handled. For more detailed information please refer to the technical manual. The operating range can be extended by selecting the option RECH (up to -20°C outside) or EPWRC and EPWRH for extremely hot or cold climates.

versions and configurations

ENERGY RECOVERY:

RTA Active thermodynamic recovery (Standard)

VERSION:

RECH Hydronic recovery device for extended operating range
EPWRC EXTRAPOWER-C (with additional chilled water heat exchanger)
EPWRH EXTRAPOWER-H (with additional hot water heat exchanger, without electronic filters)

OPERATION:

RCM Refrigeration circuit with capacity modulation (Standard)

RE-HEATING COIL:

CPHGM Hot gas re-heating coil with capacity modulation (Standard)

UNIT INSTALLATION:

IO Outdoor installation (Standard)
II Indoor installation

accessories

CCA Copper/aluminium exchanger on exhaust air with acrylic lining
CEA Copper/aluminium exchanger on outdoor air with acryic lining
PVARC Variable air flow on supply and exhaust with CO_2 probe
PVARCV Variable air flow on supply and exhaust with CO_2+VOC probe
PVARP Variable air flow on supply and exhaust air with supply pressure probe
MHSEX immersed electrodes steam humidifying module
MOB Serial port RS485 with Modbus protocol
LON Serial port RS485 with LonWorks protocol
BACIP BACnet-IP serial communication module
VSXSA Modification of the supply humidity ratio setpoint "X_SA" by an external signal: enable/disable via external contact or setpoint changing via Modbus and BACnet-IP protocol
DESM Smoke detector
AMRX Rubber antivibration mounts
AMRUX Rubber antivibration mounts for unit and humidification module
RSSX Remote supply air sensor
PTCO Set up for shipping via container
F7B High efficiency F7 air filter (ISO 16890 ePM1 60%)
VRFG VRF Gateway

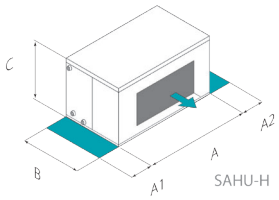
Accessories whose code ends with "X" are supplied separately

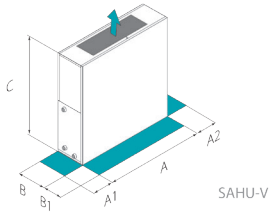
SAHU

SAHU 1÷8

EASY AND FLEXIBLE INSTALLATION

SAHU units are ideal air handling terminal units for applications where air distribution by means of ducts is required. The possibility of vertical or horizontal installation in addition to the compact size and the low noise levels make them particularly suitable for mounting in false ceilings or technical rooms.





CAN BE INTEGRATED WITH ANY TYPE OF SYSTEM

The SAHUs are designed to be able to treat all outdoor air or all recirculating air according to the design needs and can be integrated with any type of system. They are available in 2- or 4-pipe version for hydronic systems or in direct expansion versions for connection to the Clivet VRF and Mini VRF system.

SOUNDPROOFING AND THERMAL INSULATION PANELS

The SAHU units have self-supporting double sheet steel panels and internal insulation in polyurethane foam (thickness 40mm). The panels can be removed easily to access the internal components.

WIDE RANGE OF FILTERS THAT CAN BE REMOVED FROM ANY SIDE

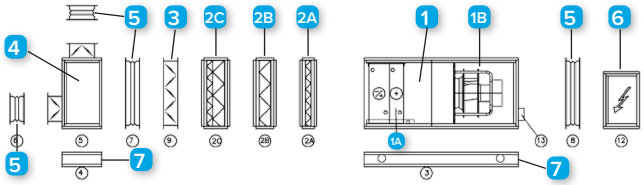
Our filters range from coarse to high performance microdust filters, making the SAHU units suitable for disparate applications. All types of filters are mounted on vertical and horizontal guides that allow extraction from all 4 sides.

PLUG FANS OR CENTRIFUGAL FANS WITH TRANSMISSION

SAHU units are available with double suction centrifugal drive fans or radial plug fans coupled with EC brushless motors.
The wide range of motors allows you to adjust the ventilation speed with 3 speed steps, achieve a flow rate from 600 m³/h to 16950 m³/h and attain pressure up to 700 Pa.

A COMPREHENSIVE RANGE OF ACCESSORIES

In addition to the wide choice of filters, there are heating elements, secondary hot water coils, mixing chambers, anti-vibration mounts and bases.



N°	Description		
1	Base unit	3	Return air damper
1A	1 or 2 range hot water coil	4	Air mixing chamber
1B	Radial fan with EC Brushless motor	5	Anti-vibration expansion joint
2A	48mm frame for single filter	6	Heating element module
2B	98mm frame for single filter	7	Aluminium base plate h=120mm
2C	48+98mm double frame for air filter		

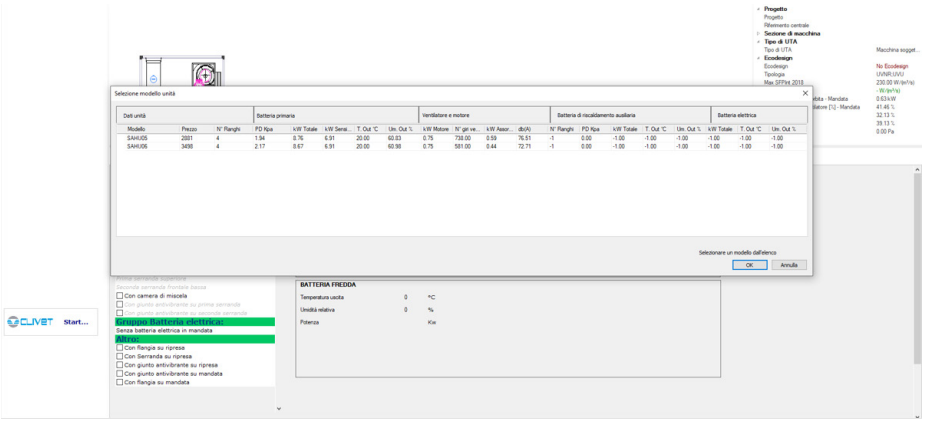
TOUCH-KEY CONTROL

The WDC-86E/KD wired control for direct expansion SAHUs has an LCD display for managing the following functions:
- Switch the unit ON/OFF
- Operation mode: Auto, Heating, Cooling, Dehumidification, Ventilation
- Setting of the fan speed (Low, Medium, High or Auto)
- Setting of the temperature (temperature range between 17°C and 30°C)
- Timed signalling of dirty filters, alerting to the need for routine maintenance

The HID-T2 wired control for hydronic SAHUs can be used to select and set the following functions:
- Switch the unit ON/OFF
- Operation mode: Manual or Automatic Cooling/Heating
- Setting of the fan speed (Low, Medium, High or Auto between a minimum and a maximum value)
- Temperature Setting
- Setting of the ECO function to prioritise reduced electricity consumption over comfort
- Management of modulating valves for 2- or 4-pipe system
- Timed signalling of dirty filters, alerting to the need for routine maintenance

SELECTION SOFTWARE

The CTAPRO air handling unit selection software allows you to size the units and immediately obtain the complete technical offer of drawings and data sheets.



technical data

SAHU 1÷8

SAHU											
Size			SAHU	1	2	3	4	5	6	7	8
Ventilation		Airflow	m^3/h	1500	2090	2890	4020	5580	7750	10770	15000
Cooling	C4 (1)	Cooling capacity	kW	8,46	11,5	15,74	22,67	32,35	42,92	60,47	82,95
		Sensible capacity	kW	6,24	8,53	11,71	16,64	23,42	31,66	44,27	61,14
		Water flow rate	l/s	0,4	0,5	0,8	1,1	1,5	2	2,9	4
	C6 (2)	Cooling capacity	kW	10,25	13,83	19,39	26,55	37,91	50,27	70,94	99,17
		Sensible capacity	kW	7,33	9,97	13,88	16,16	27,06	36,52	51,17	71,41
		Water flow rate	l/s	0,5	0,7	0,9	1,3	1,8	2,4	3,4	4,7
	E4 (2)	Cooling capacity	kW	7,28	10,1	15,48	22,17	30,94	42,31	59,08	82,29
		Sensible capacity	kW	5,76	7,97	11,6	16,45	22,89	31,43	43,75	60,89
Heating	C4 (3)	Heating capacity	kW	9,57	13,11	18,03	24,46	35,61	48,57	67,72	93,84
		Water flow rate	l/s	0,5	0,6	0,9	1,2	1,7	2,3	3,3	4,5
	C6 (3)	Heating capacity	kW	10,88	14,89	20,63	28,72	40,12	54,86	76,51	106,65
		Water flow rate	l/s	0,5	0,69	1	1,39	1,89	2,61	3,7	5,2
MAX power input (IE3 - CFG C&P)			kW	0,75	1,1	1,1	2,2	3	4	5,5	7,5
MAX power input (IE4 - EC PLUG FAN)			kW	1,05	1,05	1,05	1,1	1,85	2,9	3,3	5
Sound power level (4)			dB(A)	67	74	75	77	78	80	82	89
Power supply			V\Ph\Hz	400/3~/50							

The product respects European Directive ErP (Energy Related Products), which includes the delegated regulation (UE) N. 2016/2281 of the Commission, also known as Ecodesign Lot21

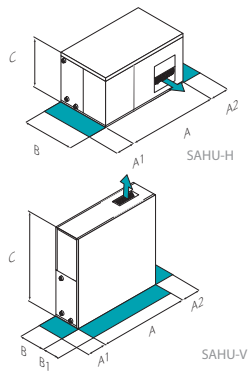
(1) Hydronic SAHUs for cooling: exchanger water inlet 7°C (temperature differential 5°C) Ambient air 27°C D.B / 19°C W.B.

(2) Direct expansion SAHUs for cooling: Internal temperature 27°C D.B. / 19°C W.B. Evaporator temperature 8°C / Condenser temperature 46°C

(3) Hydronic SAHUs for heating: exchanger water inlet 45°C (temperature differential 5°C) Ambient air 20°C D.B. 50% RH

(4) The sound power levels are referred to a unit at full load, under nominal test conditions.

dimensions and clearances



Size	SAHU H / SAHU H_EC		1	2	3	4	5	6	7	8
A - Length		mm	780	880	1120	1280	1500	1720	1890	2510
B - Width		mm	1100	1100	1100	1300	1350	1350	1350	1350
C - Height		mm	530	530	530	590	660	750	900	900
A1		mm	500	500	500	500	500	500	500	500
A2		mm	500	500	500	500	500	500	500	500
H C4	Weight	kg	78	85	98	134	167	202	274	330
H C6	Weight	kg	81	88	102	141	176	215	292	353
H E4	Weight	kg	78	84	97	133	165	199	270	326
H_EC C4	Weight	kg	57	63	74	101	132	163	211	268
H_EC C6	Weight	kg	60	66	78	108	141	176	229	291
H_EC E4	Weight	kg	57	62	73	100	130	160	207	264

Size	SAHU V / SAHU V_EC		1	2	3	4	5	6	7	8
A - Length		mm	780	880	1120	1280	1500	1720	1890	2510
B - Width		mm	530	530	530	590	660	750	900	900
C - Height		mm	1100	1100	1100	1300	1350	1570	1870	1950
A1		mm	500	500	500	500	500	500	500	500
A2		mm	500	500	500	500	500	500	500	500
B1		mm	1000	1000	1000	1000	1000	1000	1000	1000
V C4	Weight	kg	84	91	105	142	177	217	318	386
V C6	Weight	kg	87	94	109	149	186	230	336	409
V E4	Weight	kg	84	90	104	141	175	214	314	382
V_EC C4	Weight	kg	63	69	81	109	142	178	255	328
V_EC C6	Weight	kg	66	72	85	116	151	191	273	351
V_EC E4	Weight	kg	63	68	80	108	140	175	251	324

The above mentioned data are referred to standard units for the constructive configurations indicated.

The weight indicated refer to unit without water/gas inside of the coil.

versions and configurations

VOLTAGE:

400T Supply voltage 400/3~/50

VERSION:

SAHU H Horizontal air handling unit with centrifugal fan
SAHU V Vertical air handling unit with centrifugal fan
SAHU H EC Horizontal air handling unit with EC plug fan
SAHU V EC Vertical air handling unit with EC plug fan

MAIN COIL:

C4 4-row water coil
C6 6-row water coil
E4 4-row direct expansion coil

WATER FITTINGS:

DX Water fittings to the right
SX Water fittings to the left

SECONDARY HOT WATER COIL:

- Hot water coil: not required (Standard)
CH1 1-row hot water secondary coil
CH2 2-row hot water secondary coi

accessories

FS4 Frame with G4 (ISO 16890 Coarse 60%) efficiency filters, thickness 48 mm
FS5 Frame with M5 (ISO 16890 ePM10 65%) efficiency filters, thickness 98 mm
FS6 Frame with M6 (ISO 16890 ePM10 70%) efficiency filters, thickness 98 mm
FS7 Frame with F7 (ISO 16890 ePM1 55%) efficiency filters, thickness 98 mm
FS8 Frame with F8 (ISO 16890 ePM1 70%) efficiency filters, thickness 98 mm
FS9 Frame with F9 (ISO 16890 ePM1 80%) efficiency filters, thickness 98 mm
FS45 Frame with G4 (ISO 16890 Coarse 60%) efficiency filters, thickness 48 mm + M5 (ISO 16890 ePM10 65%) th. 98 mm
FS46 Frame with G4 (ISO 16890 Coarse 60%) efficiency filters, thickness 48 mm + M6 (ISO 16890 ePM10 70%) th. 98 mm
FS47 Frame with G4 (ISO 16890 Coarse 60%) efficiency filters, thickness 48 mm + F7 (ISO 16890 ePM1 55%) th. 98 mm
FS48 Frame with G4 (ISO 16890 Coarse 60%) efficiency filters, thickness 48 mm + F8 (ISO 16890 ePM1 70%) th. 98 mm
FS49 Frame with G4 (ISO 16890 Coarse 60%) efficiency filters, thickness 48 mm + F9 (ISO 16890 ePM1 80%) th. 98 mm
BAH Base for horizontal basic unit H=120 mm
BAV Base for vertical basic unit H=120 mm

✔**BAM** Base for mixing chamber H=120 mm
✔**MBX** Mixing chamber with dampers
✔**AFM** Antivibration mount for mixing chamber damper
✔**AFR** Return antivibration mount for basic unit
✔**AFS** Supply antivibration mount for basic unit
✔**DAR** Return damper for basic unit
✔**FLR** Return flange for basic unit
✔**FLS** Supply flange for basic unit
✔**EC1** Electric coil version 1
✔**EC2** Electric coil version 2
FTB Box with terminal block for centrifugal fan wires
ETB Box with terminal block for EC plug fan wires
✔**KT4** Spare filters - G4 (ISO 16890 Coarse 60%) th. 48 mm
✔**KT5** Spare filters - M5 (ISO 16890 ePM10 65%) sp. 98mm
✔**KT6** Spare filters - M6 (ISO 16890 ePM10 70%) sp. 98mm
✔**KT7** Spare filters - F7 (ISO 16890 ePM1 55%) sp. 98mm
✔**KT8** Spare filters - F8 sp. (ISO 16890 ePM1 70%) 98mm
✔**KT9** Spare filters - F9 (ISO 16890 ePM1 80%) sp. 98mm

✔Accessories supplied separately

AQX/CLA

AQX/CLA 1÷32

*Only for AQX

WIDE RANGE FOR EVERY EVENTUALITY

Clivet air handling units are available in 32 standard sizes capable of covering flow rates from 1500 to 100000 m³/h (with a coil crossing speed of 2.5 m/s) and are designed to meet any need in:

- Size: in addition to the standard sizes it is possible to set up any section with a 50 mm pitch in terms of both height and width.
- Structure: the frame is available in 50 or 60 mm versions and the insulation of the panelling can be in polyurethane or rock wool.
- Design: The internal components such as fans, filters, humidifiers, batteries, sound attenuators and dampers are available in various solutions and positions.

By being flexible in all these respects, the air handling units can meet all system requirements and perfectly respond to the disparate needs of the market.

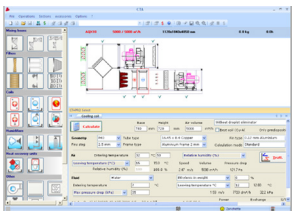
INDOOR OR OUTDOOR INSTALLATION

All the air handling units are suitable for installation either indoors or outdoors. For installation outdoors, the units are protected against weathering damages through:

- A protective scratch-resistant plastic coating on the outer sheet metal of the panels
- Walkable aluminium roof
- Anti-fingerprint coating supplied as standard
- Technical compartment for the valves and regulating components, available in various depths and lengths

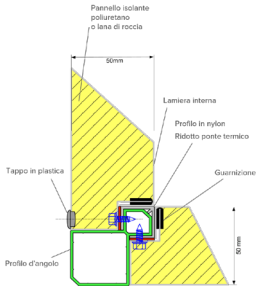
SELECTION SOFTWARE

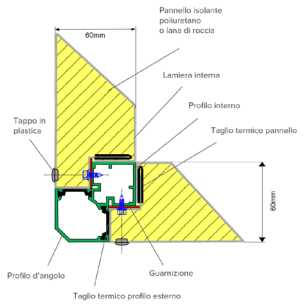
The Clivet CTAPRO selection software helps the customer to quickly ascertain his technical needs and perform an economic assessment of the costs of each air handling unit. It is a complete tool for configuring any type of product and meeting the strictest design requirements. The result is a complete economic offer that includes all the data and technical drawings, details of the components of the unit, the relative air handling and the fan performance curves.



STRUCTURE

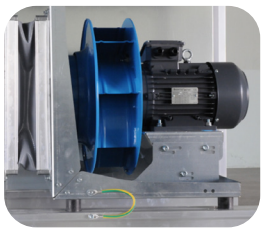
The load-bearing structure of the air handling units is available in 50x50 or 60x60mm versions and ensures maximum rigidity and lightness. The profiles, panels and corners can be combined perfectly and guarantee excellent sound insulation and air-tightness in all cases:
The 50x50 or 60x60 profiles have a double chamber to conceal the fixing screws and avoid thermal bridges.
The three-way corners are made of fibreglass-reinforced nylon and with thermal cut.
The 50 or 60 mm sandwich with thermal cut, consist of a double sheet metal wall with polyurethane foam or mineral wool fibre insulation in between.





FAN SECTION

The fan section plays a key role in the first stage of energy absorption. Fans are available with forward/backward curved blades, backward curved airfoil blades or plug fans. Available in different configurations, they can have belt and pulley transmission or can be directly coupled with motor (three-phase acynchronous, coupled with inverter or brushless EC).



HUMIDIFYING SECTION

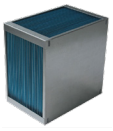
Clivet offers a wide range of humidification systems for its units to meet the specific needs of any customer. Available systems are both adiabatic or isothermal:

- Adiabatic humidification: it consists of an evaporator with honeycomb cellulose fibre pad to guarantee an efficiency of 60%, 70% and 80%. They can be equipped or without a circulation pump.
- Isothermal humidification: the steam is produced heating elements or immersed elecrodes that heat up the surrounding water and produce saturated steam under pressure from 1 to 4 bar and a capacity of 500 kg/h.

HEAT RECOVERY SECTION

In compliance with the laws in force and in response to the growing demand for energy-saving products, Clivet air handling units can be equipped with static heat recovery, rotary or glycol water coils:

- Static Recovery: cross-flow plate heat recovery unit without moving parts and therefore extremely safe and reliable.
- Rotary recovery: air-to-air heat recovery unit available in aluminium, hygroscopic matrix or adsorbent silicon and capable of exchanging sensitive and latent heat.
- Run around coils: recovery involving two heat exchangers, one for the renewal air and the other for the recirculation air. It ensures maximum cleanliness as the heat is transferred in a dedicated hydraulic circuit.



FILTERING SECTION

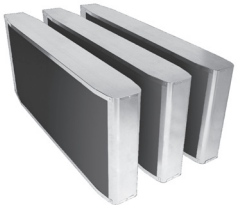
The filtering section is responsible for purification and quality of the air entering the building. Different types of filter are available, depending on the air quality and level of filtration required: cartridge, synthetic, zig-zag, rigid/soft bags, metallic, active absorber carbon and absolute. Electronic filters with a high degree of filtration and very low pressure drops are also available. Side or front inspection doors simplify access and maintenance.

HEATING AND COOLING SECTION

The heating and cooling sections perform thermal treatment. There are various types of heat exchanger for heating and cooling: hot or chilled water, water at high temperature, steam and direct expansion. Standard coils are made with copper tubes and aluminium fins, but are also available in different materials, diameter, thickness and geometry. As an alternative to coils, the heating can also be provided by a gas burner section.

SOUND ATTENUATORS SECTION

The sound-absorbing section is designed to reduce sound pressure according to the design requirements. The septums are made of galvanized steel frames with mineral wool insulation and rock wool coating. They can be positioned in the return, exhaust or supply sections, and their dimensions are customizable according to the desired effect.



AIR INTAKE AND EXTRACTION SECTION

The airflow entrance and exit outside the AHU is realized by aluminium dampers with airfoil blades. The type of gasket used defines the air tightness of this section and the class of the dampers available: standard (class 2), TPE-V on blades (class 3), or TPE-V on blades and EPDM on shoulders (class 4).

ADDITIONAL SECTIONS

The wide range of components does not regard only the sections described above. Also available are inspection doors (with or without lighting systems and viewing panels), mixing chambers with two or three dampers, droplet separators, UV lamps, photocatalytic modules, antifreeze sections and duct connection systems.

CONTROL SYSTEM

Clivet AQX and CLA units can be supplied with a pre-installed and fully integrated control system. The package allows remote control of probes, valves, actuators, pressure switches, dampers and many other parameters, as well as communication between the unit and the Building Management Systems via ModBus, LonWorks and BACnet protocols. The units are tested and subjected to pre-commissioning checks inside the factory in order to guarantee high reliability and quick and easy installation.

HYGIENIC AIR HANDLING UNITS

The AQX H version is available for applications that require high hygienic standards (pharmaceutical, hospital, food and microelectronic sectors). It guarantees maximum cleanliness and ease of maintenance in compliance with DIN 1946-4 and VDI 6022-1 standards. For more details, refer to the dedicated brochure by scanning the following QR code.

Compliance with hygienic requirements (used materials/ accessibility/cleanability) acc. to:

- DIN 1946-4
- VDI 6022-1
- VDI 3803-1
- DIN EN 13053

www.tuvsud.com/kaelte-klima

technical data

AQX / CLA

Size	Height [mm] (1)	Width [mm]	Airflow considering 2.2 m/s (2)	Airflow considering 2.5 m/s (2)
1	570	770	1300	1500
2	570	820	1500	1700
3	620	920	1700	2000
4	720	870	2000	2200
5	720	920	2300	2600
6	720	1020	2600	2900
7	820	970	3000	3400
8	820	1020	3400	3900
9	820	1170	3900	4400
10	920	1120	4400	5100
11	920	1220	5100	5800
12	1070	1220	5800	6600
13	1070	1370	6700	7600
14	1170	1370	7600	8700
15	1170	1570	8700	9900
16	1320	1570	10000	11400
17	1420	1620	11500	13100
18	1420	1770	13200	15000
19	1520	1820	15100	17100
20	1520	2070	17200	19600
21	1670	2120	19800	22400
22	1770	2220	22700	25800
23	1920	2370	25900	29500
24	2020	2470	29700	33800
25	2120	2620	34100	38700
26	2270	2820	39000	44300
27	2270	3170	44700	50800
28	2270	3570	51200	58200
29	2270	4020	58600	66600
30	2270	4570	67100	76300
31	2270	5170	76900	87400
32	2270	5870	88100	100200

The table shows external dimensions of the 32 standard sizes using the 50mm frame. For the 60 mm frame, 20 mm have to be added.

(1) Reported height does not consider the dimensions of the base frame that vary according to the size of the AHU. The dimensions of the base vary according to the size of the machine.

(2) Air flow rates are given in m^3/h

accessories

The air treatment units of the AQX series are available with a vast range of accessories that can be selected directly with the selection software.

A few of the most common accessories are listed below:

- ✓ Weatherproof roof and control protection technical compartment;
- ✓ Weatherproof covers on the external air inlets and outlets
- ✓ Safety device for moving components
- ✓ Spotlights and viewing panel for inspection
- ✓ Inverters on the fan motors

Other accessories not found in the basic selection can be assessed on request.

Commands

	Individual control	Centralized	
		CCM180	CCM 270
ELFOFresh EVO	KJR-120H4/BMKO-E (Standard)		
HRV-2B	WDC-120G/WK (Optional)	Y	Y
HRV-DX-2	WDC-86E/KD (Standard) / WDC-120G/WK (Optional)	Y	Y
HRV-DXL-2	WDC-86E/KD (Standard) / WDC-120G/WK (Optional)	Y	Y
ZEPHIR³	User interface PLC (Standard)		Y (2)
AQX VRF	User interface PLC (Standard)		
Fresh Large EVO	KJR-120H4/BMKO-E (Standard)		Y
Hydronic SAHUs	HID-T2 (Standard)		
Direct expansion SAHUs	WDC-86E/KD (Standard) / WDC-120G/WK (Optional)	Y	Y
AQX/CLA	User interface PLC (Standard with AQX/CLA regulated)		

For more information on the available functionalities, please refer to the catalogues and dedicated documentation.

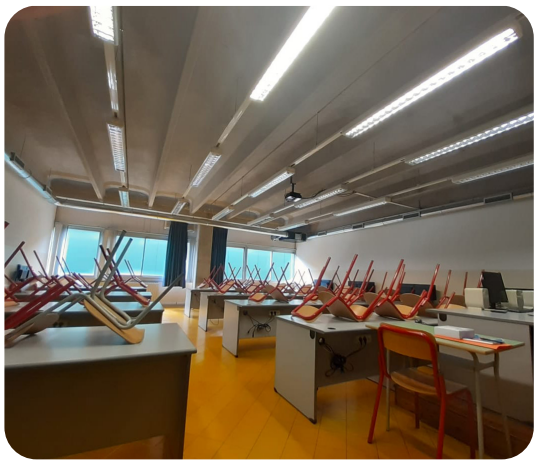
(1) With limited functionality

(2) With VRFG option

(3) Providing GWMOD(A) accessory

Cloud		Supervisor				BMS			
Included WiFi	CCM15	Clivet Eye	Control4 NRG	IMM/ IMMPRO	INTELLIAR	Modbus	Lonworks	Bacnet	Konnex
Y		Y	Y			Y			
	Y(1)			Y		Y	Y	Y	Y
	Y			Y		Y	Y	Y	Y
	Y			Y		Y	Y	Y	Y
		Y			Y	Y	Y	Y	
					Y(3)	Y	Y	Y	
		Y	Y		Y	Y			
			Y		Y	Y			
	Y			Y	Y(3)	Y	Y	Y	Y
					Y	Y	Y	Y	

Best practice



NEGRELLI HIGH SCHOOL

Feltre, Belluno - Italy
High school
System: ELFOFresh EVO
Year: 2020

RESIDENZA+

Polegge, Vicenza - Italy
Residential complex
System: (11 ELFOFresh)
Year: 2020

CPC MODENA

Modena – Italy
Mechanical processing industry
Hydronic system Rooftop, Air renewal (6 SPINChiller³ MF, 3 SPINChiller³, 2 Spinchiller⁴4 2 ELFOEnergy Medium, 2 ELFOEnergy Magnum, 1 CSNX-XHE2, 1 ZEPHIR)
Year: 2021

GROB ITALY

Pianezza, Turin - Italy
Production systems and automation industry
Enhanced VRF system + Rooftop (VRF and Mini VRF (4 ODU, 96 IDU), 4 ZEPHIR³, 2 HRV, 4 CSRN-XHE2 80.4)
Year: 2020

AMILCARE PONCHIELLI theatre

Cremona- Italy
VRF system (2MV6-XMI, 12 GWMN-2-XMI, 4 CNT2-2-XMI, 3 DZGF3B-2-XMI, 10 HRV-DX-2-XMI)
Year: 2021

SANTA MARGHERITA

Multi-tenant business centre
Enhanced Hydronic system (2 ELFOEnergy Ground Medium2 MF, fancoils, 2 ZEPHIR³)
Year: 2018

PALAZZO EDISON

Milan - Italy
Offices
Enhanced hydronic system (2 SPINChiller³ MF, 1 ELFOEnergy Ground Medium2, 8 ZEPHIR³)
Year: 2015

PROFESSIONAL INSTITUTE "PUECHER OLIVETTI"

Milan - Italy
High school
System: ZEPHIR3
Year 2022

LIBRARY AND CIVIC CENTRE

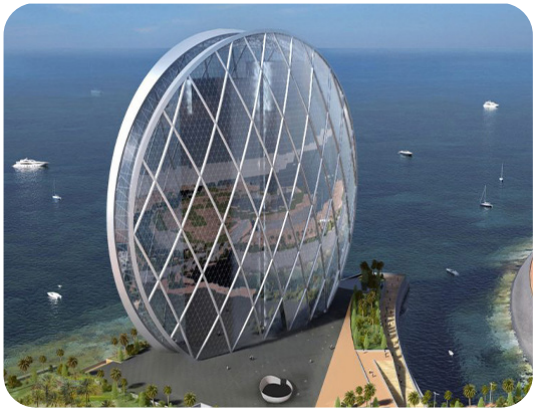
Arese, - Italy
Library and civic centre A Class
Hydronic system + Packaged (1 ELFOEnergy Ground Medium2, 1 ELFOEnergy Extended Inverter, 1 AQX, 1 Rooftop CLIVETPack2)
Year: 2016

ABU DHABI PLAZA

Astana - Kazakhstan
Multifunctional complex
Hydronic system + Air handling units

ENAP

Agen - France
Hydronic system - Air handling units AQX (72000 m³/h)
Year: 2020



ALDAR HEADQUARTERS

Abu Dhabi - UAE
Office complex
Hydronic system + Air handling units

Best practice

BURJ KHALIFA FOUNTAIN

Dubai- UAE
Fountain
Hydronic system + Air handling units

ITALY PALACE – EXPO MILANO 2015

Milan - Italy
Permanent exhibition hall
Hydronic system + UTA (2 multipurpose heat pumps, 7 AQX)
Year: 2015

LIBESKIND TOWER

Milan - Italy
Office complex
Hydronic system+ UTA (3 centrifugal chillers and 8 AQX)
Year: 2020

SALALAH shopping centre

Salalah - Oman
Shopping centre
Hydronic system +Primary Air (6 SCREWLine³, 44 UTA-AQX, 14 fancoil)
Year: 2021

CAGLIARI ELMAS AIRPORT

Cagliari - Italy
Airport terminal
Packaged system, VRF, Mini-VRF, ZEPHIR³ (27 Clivetpack2 between CSRN-XHE2 and CSNX-XHE2, 12 ELFODuct, 2 ZEPHIR³, 1 VRF system with M5-XMI + 5 Q4DN-XMi, 2 Mini VRF system with MSAN- XMI + 4 Q4AN-XMI + CN-XMI)

IMA LIFE

Castel San Pietro Terme, Bologna - Italy
Machine manufacturing industry
Packaged system, enhanced VRF system, hydronic (2 SPINChiller³ MF, 10 CSRN -XHE2, 1 CSRN-XHE2, 1 Spinchiller³, 1 AQX, 1 ELFOEnergy Medium, 1 ELFOEnergy Magnum, 1 VRF system MV6-XMi + with 11 DNB2-XMi, ZEPHIR³)
Year: 2020

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Clivet, in compliance with Regulation 517/2014, informs that its products contain or function with the use of fluorinated greenhouse gases: R-32 (GWP 675), R-410A (GWP 2087,5), R-134a (GWP 1430) and R-407C (GWP 1773,85), R-513A (GWP 631), R-1234ze (GWP 7).

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