VERSATEMP DUCT

EVH-M 7- 101 RANGE

Packaged WLHP air conditioner



TECHNICAL BULLETIN

SIZE	7	11	17	25	31	41	61	81	101
Nominal flow-rate m^3/h	420	580	850	1200	1700	2600	3200	4500	5500
Cooling capacity kW	2,22	3,12	4,43	6,39	8,62	12,0	16,0	22,7	26,8

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Features

HVAC systems: what are they for?

To ensure comfortable thermal and hygrometric conditions for building occupants, HVAC (Heating, Ventilation and Air Conditioning) systems are used to:

- Offset energy losses or gains through casing surfaces;
- Counteract indoor loads generated by activities and equipment in the environment;
- Reduce the load related to the intake of outside air, introduced either through natural ventilation or dedicated mechanical systems (VMC);
- Reduce the concentration of pollutants in the environment (through filtration or fresh air).

The role of WLHPs (Water Loop Heat Pumps)

The VERSATEMP series consists of self-contained air-conditioning terminals that independently heat and cool rooms all year round using water as the heat source.
They are the ideal solution for air conditioning in shopping centres, offices and hotels, and more generally in all large, multi-zone buildings characterised by frequent conflicting thermal demands.
In fact, when opposing thermal loads occur in a system comprising several terminals that share the same water loop, the energy dissipated by the units in cooling mode is transferred to the units in heating mode, thereby balancing the temperature of the loop without the need to activate the source control systems.



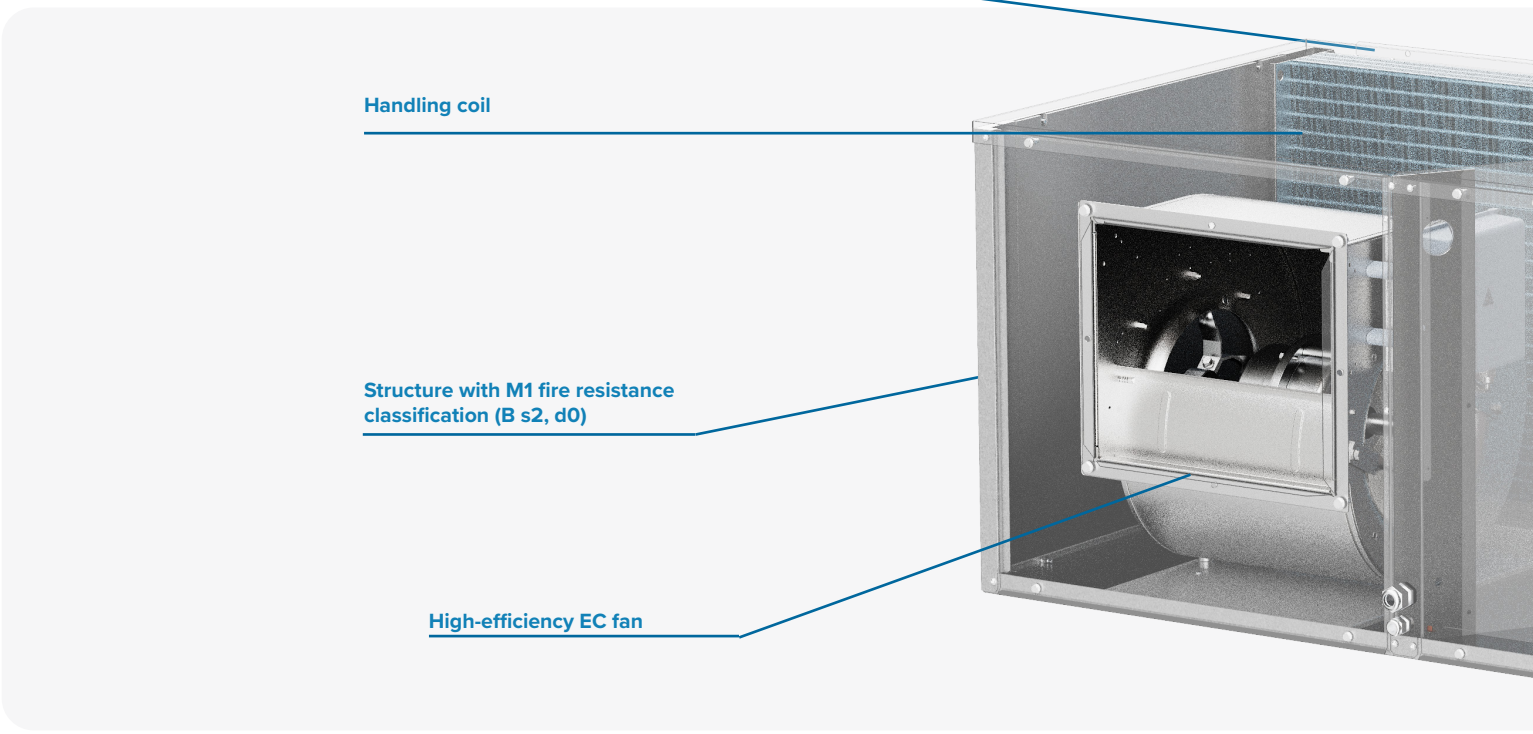
Thanks to the packaged structure, all the components are integrated into the unit, already assembled and factory tested.

- The use of an environmentally friendly refrigerant makes this an F-Gas compliant solution.
- Centrifugal fans coupled with brushless EC motors ensure the required air flow-rate by adapting to the air distribution system.
- Automatic control of the airflow based on the actual needs of occupants.
- Multi-stage air filtration, ranging from standard Coarse 40% (G2) filtration to high-efficiency F7 ePM1 55% filtration.
- Air supply available in-line or at a 90° angle.
- Possibility of remote management using the Clivet EYE APP and CONTROL4 NGR, with compatibility with main supervision systems through MODBUS protocol.

Features

Ventilation and purification

- EC fans with automatic adjustment to ensure a constant flow-rate over time with side blow possibility
- Variable airflow depending on the actual ambient load
- Silent mode for the utmost acoustic comfort
- High-efficiency filtration of intake air with the high efficiency filters provided



Retrofit solution

- Simultaneous heating and cooling with energy transfer
- A system that is easy to expand: investments spread out over time
- Energy distribution within the building using plain water at room temperature
- Refrigerant found only in indoor units and in loop control systems
- Compatible with various natural sources: the sea, lakes, the ground, well water or mains water

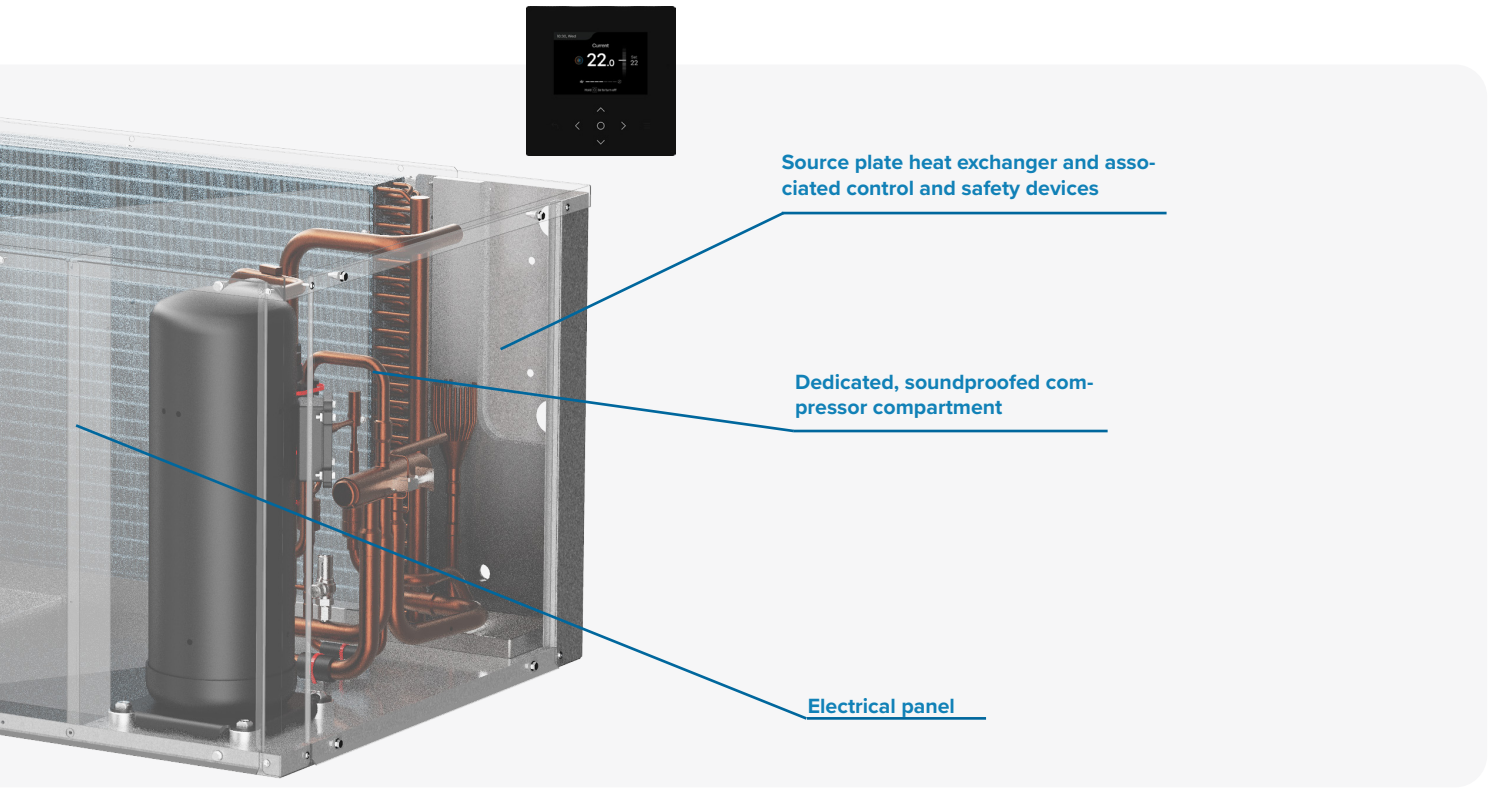
Advantages of the WLHP system

VERSATEMP DUCT (EVH-M) units can be easily installed in existing systems to replace units from the EVH-X, EVH-X SPACE, CH and EVH series.
This is possible thanks to compatibility:

- of the output power
- of the range of airflows
- of the range of source water flow-rates
- of the hydraulic connections

Ideal for both existing buildings and new builds

- A compact and fully self-contained unit
- Reduced amount of refrigerant inside the building, resulting in lower frequency of periodic checks required by the F-GAS regulation.
- Specific hydraulic groups are available for the various system configurations
- Standard Modbus connectivity
- Integration into CONTROL4 NRG supervision systems with remote management via the Clivet EYE APP



Industrial quality and safety

- Detection of any refrigerant leaks through dedicated devices
- All components are designed for installation on the unit
- The units are tested and inspected by Clivet following strict quality standards

Clivet's choice towards a green evolution

Reduction of the environmental impact by up to 90% through the use of R454C refrigerant with low GWP (148) and the careful design of every component.

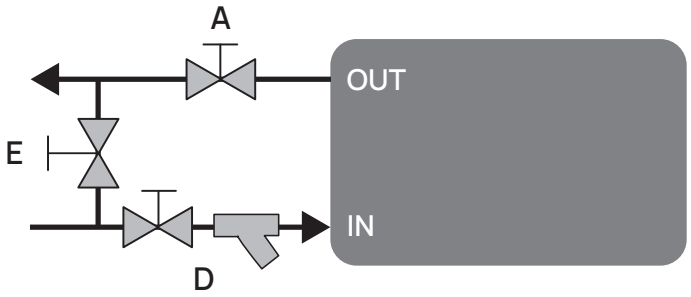
Features

Typical applications

The supply water may come from a WLHP energy-transfer loop, from a natural source such as a well or groundwater aquifer, or even from the water supply system in specific cases where there are architectural constraints.
The integration of optional hydraulic components simplifies the start-up and operation of the system. As well as helping to improve the system's efficiency, they make it easier to maintain the equipment and replace the units without the need for downtime.

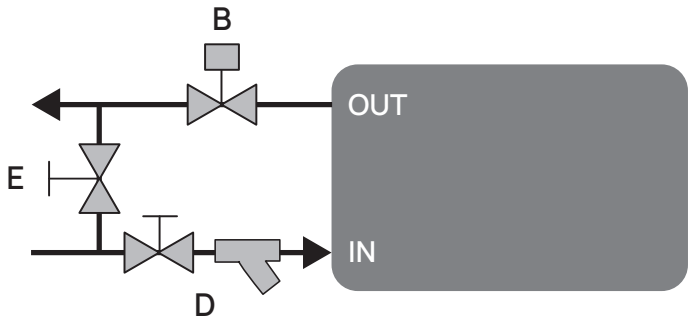
- Loop with constant flow-rate
- Loop with variable flow-rate
- Loop with disposable water

Application: loop with constant flow-rate



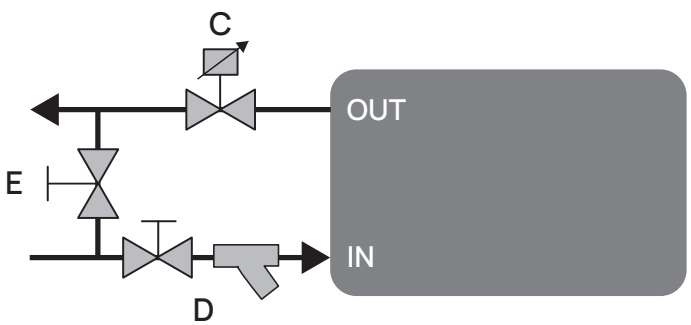
A Manually operated shut-off valve
D Steel mesh filter and manually operated shut-off valve
E Manually operated by-pass valve

Application: loop with variable flow-rate



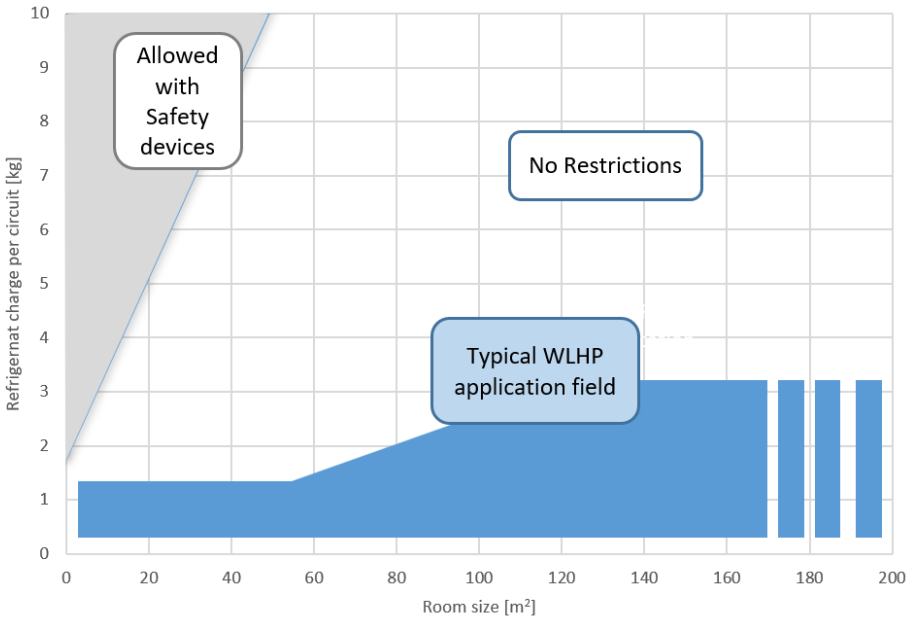
B Motorised ON/OFF 2-way valve
D Steel mesh filter and manually operated shut-off valve
E Manually operated by-pass valve

Application: system using disposable water



C Motorised modulating 2-way valve
D Steel mesh filter and manually operated shut-off valve
E Manually operated by-pass valve

R454C refrigerant



Limit straight line calculated with room height of 3 m
No limitation for refrigerant charges of less than 1.76 kg of R454C

European regulation EC 517/2014 envisages a reduction in the use of HFC (F-gas) refrigerants with the aim of reducing their environmental impact, measured through the GWP (Global Warming Potential) parameter.

For units with WLHPs below 50 kW, from 1 January 2027, only systems using environmentally friendly refrigerants with a GWP of less than 150 may be placed on the European market.

Clivet, which has always placed a strong focus on the development of technological solutions aimed at protecting the environment, adopts R454C refrigerant with a low GWP (148) which reduces the environmental impact by up to 90%.

The use of this A2L refrigerant (slightly flammable) is in line with the EN 60335-2-40 standard, which defines its correct application based on the refrigerant charge and the surface of the rooms served.

Operating principle

Thermoregulation

The unit is an air conditioner with an integrated heat pump that exchanges heat with air in the indoor environment and with water on the source side.
Thermoregulation is based on a comparison between the return temperature of the unit and the setpoint.
Correct operation at high efficiency levels is ensured by the continuous monitoring of the pressure and temperature in the refrigeration circuit.

Intrinsic safety

The unit constantly monitors the main operating parameters in order to ensure reliable and continuous operation and thereby prevent malfunctions and the risk of formation of ice on the source side. Specifically, the units are fitted as standard on the source water side with inlet and outlet temperature sensors and a differential pressure switch.

Features

Automatic management of the air flow-rate



Constant: just the flow-rate required

The nominal air flow-rate is set directly on the display, ensuring:
- Simplified system calibration and testing;
- Constant flow-rate thanks to automatic fan coild speed control;
- Compensation of the constant clogging of filters;
- Maximum manufacturing reliability of diffusion systems that do not support variations in flow-rate, as in the majority of induction systems.

Variable: only the flow-rate required

Flow-rate modulation can be carried out in 2 modes:

automatic:

The flow-rate is adjusted according to the difference between the setpoint and the actual room temperature measured.
- It ensures lower energy consumption for ventilation whilst also improving acoustic comfort in the room.

the external signal:

Ideal solution for independent environments managed by a single unit, e.g. hotels or offices with variable occupancy profiles.
- It allows the building manager to adjust operation of the unit in a flexible manner and at their discretion.

Silent Mode

To minimise the sound impact of the unit and distribution ducts, Silent mode can be activated via an external signal, control keypad or supervisory system.
This mode works by reducing the speed of the fans whilst still maintaining control over the room loads.



Unit management

The optional user interface allows for simple and intuitive operation of the unit.

In addition to managing the standard operating parameters and modes and detecting the temperature with an integrated probe, the device features an 'end-user' mode: interaction with the interface is limited to adjusting the setpoint and airflow, making the experience intuitive and straightforward for the typical hotel guest or office worker.

Finally, the device allows the system operator to control it remotely via the CLIVET EYE APP using the integrated Wi-Fi.



Connectivity

VERSATEMP systems can be easily integrated into supervision systems that use Modbus as a communication protocol, thus providing access to the full list of operating variables, commands and alarms.
It is also possible to manage the unit from systems such as:

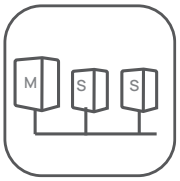
√ Clivet EYE (HMI standard)
- System for the monitoring and control of individual units



√ CONTROL4 NRG
- Monitoring system and system control consisting of several units



√ Mini-network
- Local management of up to 15 units, one of which is the master and the others are slaves



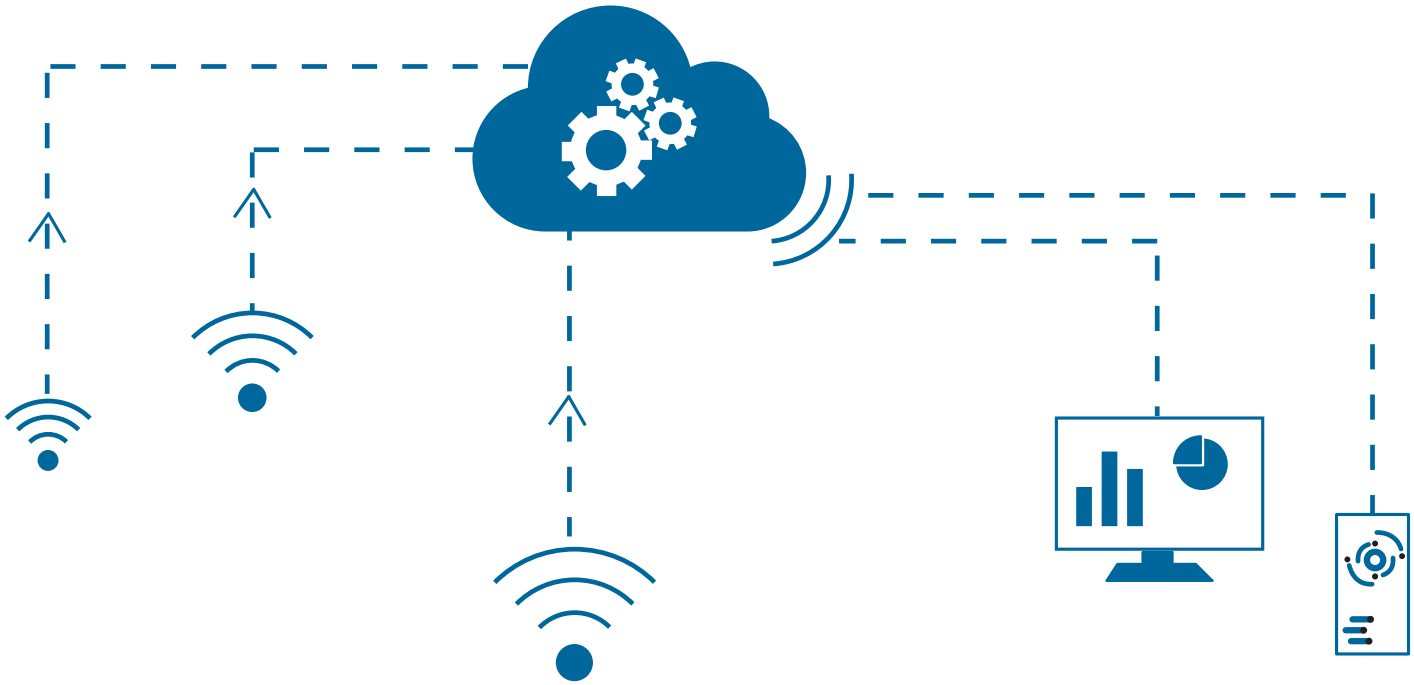
Features

CLIVET EYE

CLIVET EYE is the remote monitoring and control platform for Clivet products.
The system integrates IoT and Cloud technologies to provide users with a simplified view of the units and, at the same time, provide an effective tool to support maintenance personnel.

Real-time access to operational data allows users to intelligently manage their equipment, fully understanding its functionality and optimising its use through in-depth parameter analysis. Remote accessibility also gives professionals the ability to quickly detect malfunctions and significantly reduce intervention times through simplified diagnostics directly in the Cloud.

Product connectivity via mobile devices is therefore an essential element today to ensure business continuity and increase equipment lifetime.



Supervision

- Constant monitoring of operating data

Analysis

- Simplified inspection and diagnostics
- Detection of consumption and wear

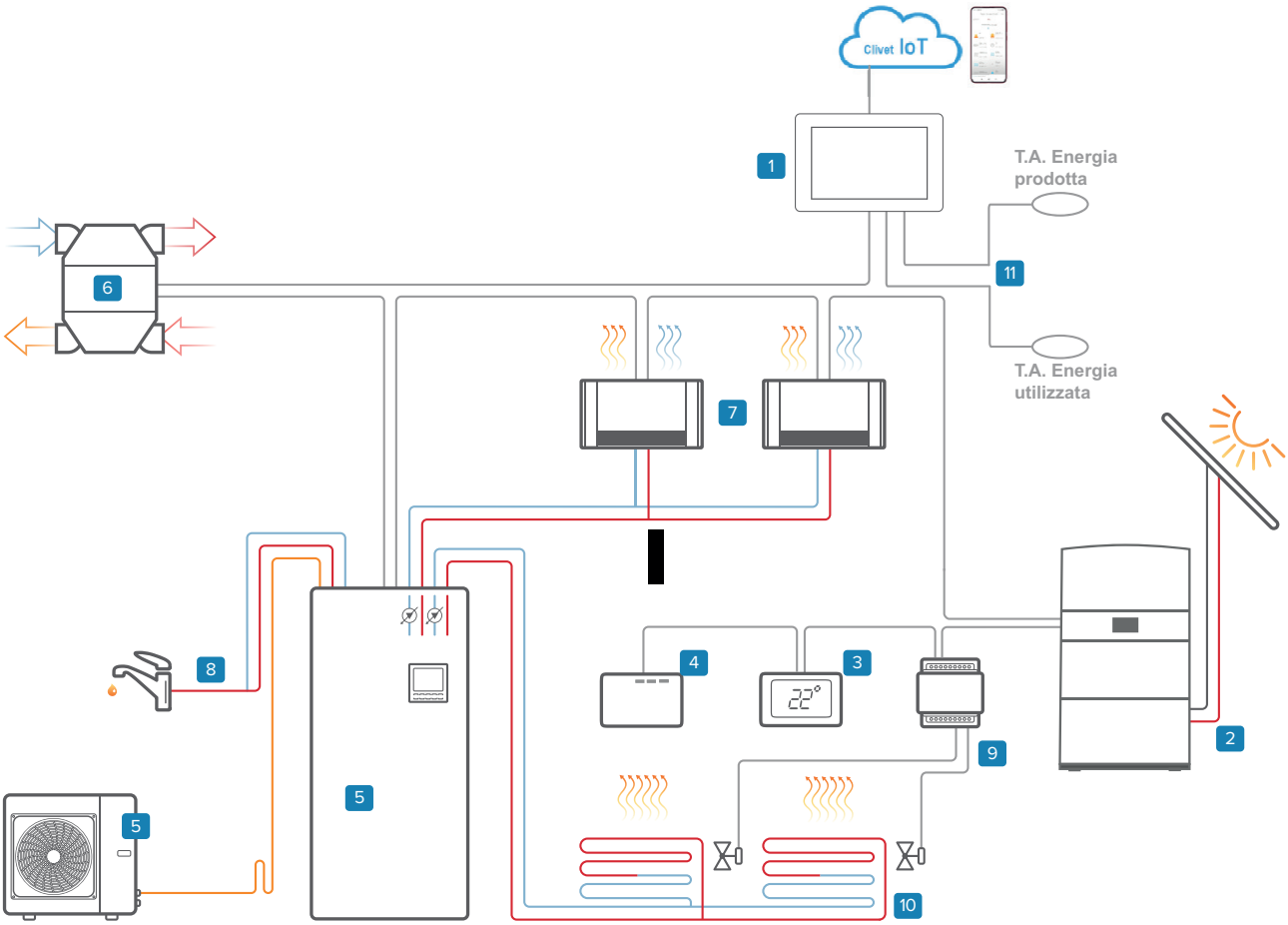
Action

- Remote control
- Reduced maintenance costs
- Longer equipment life

CONTROL4 NRG

A single smart system with all the elements that generate year-round comfort:

- ✓ Heating
- ✓ Cooling
- ✓ Domestic hot water
- ✓ Air renewal and purification
- ✓ Humidity control
- ✓ Local and remote monitoring of electricity produced by the system and absorbed by the systems

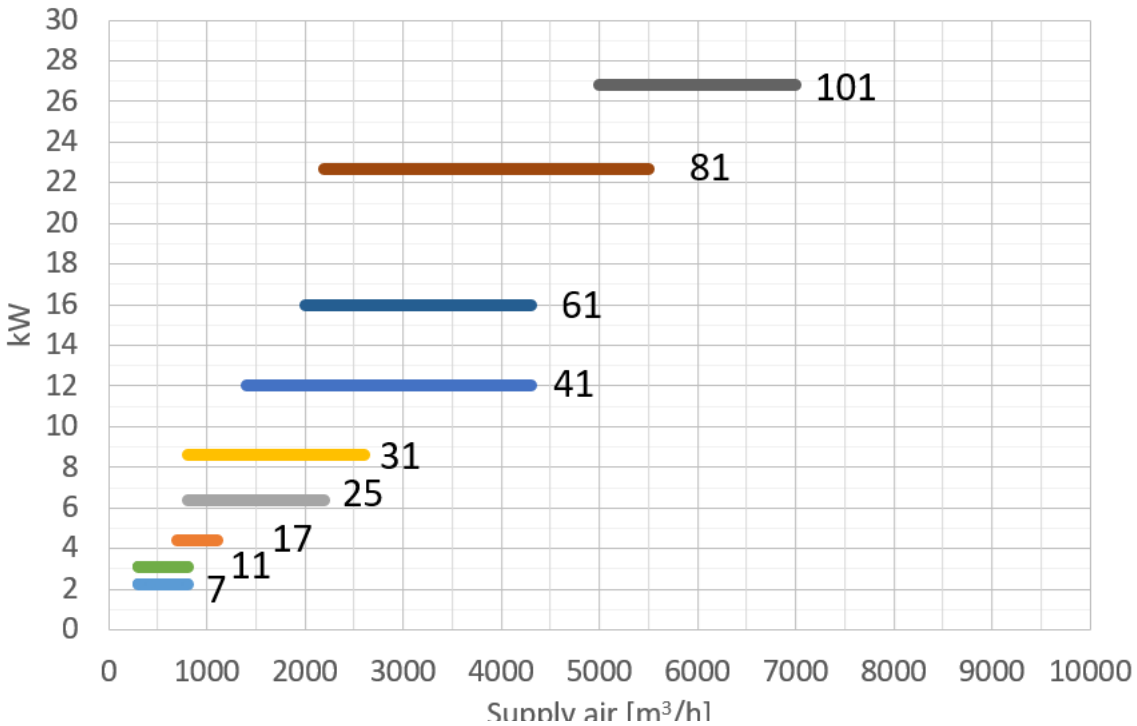




1 CONTROL4 NRG
2 SINERGY2
3 HID-TSmart
4 Z-IAQ
5 SPHERA EVO 2.0
6 ELFOFRESH EVO
7 ELFOROOM2
8 DOMESTIC HOT WATER
9 MODULE FOR RADIANT ZONES
10 RADIANT PANELS
11 ELECTRICITY METER

Unit configuration

How to select the unit



Filter nomenclature in accordance with EN ISO 16890

The classification of air filters is based on the ability to retain airborne particulate matter.
To make it possible and easier to select appropriate filters according to different applications, the global reference standard for filtration is EN ISO 16890.
It defines a new classification for air filters based on their ability to retain dispersed airborne particulate matter (PM10, PM2.5 and PM1) through stringent and specific test methods.
The previous standards in force, such as EN 779-2012, ASHRAE 52.2 and other local standards, are thus unified for all countries worldwide.
Below, the correlation between the traditional nomenclature and the global standard for filters used in Clivet units.
For easier reading, both names have been kept in the text.

Supply section	Filtration stage (standard)	ISO 16890 Coarse 40%	G2
	Filtration stage (alternative)	ISO 16890 ePM1 55%	F7
	Pre-filtration stage (optional)	ISO 16890 ePM10 70%	F6

Standard unit technical specifications

Compressor

Sizes 7 - 11 - 17 - 25 - 31. Hermetic rotary compressor with gas compression in the compressor casing, direct suction, without oil heater. Mounted on anti-vibration rubber mounts and supplied complete with oil charge.

Sizes 41 - 61 - 81 - 101. Hermetic orbiting scroll compressor complete with motor protection against overheating, overcurrent, and excessive discharge gas temperatures. Mounted on anti-vibration rubber mounts and supplied complete with oil charge.

Structure

Load-bearing structure made entirely of zinc-magnesium sheet steel, guaranteeing excellent mechanical properties and high long-term corrosion resistance.

Panelling

The compressor compartment is made of heavy-gauge sheet metal and fully insulated with sound-absorbing and sound-insulating materials to minimize noise propagation. The fan section is fully lined with anti-condensation and sound-absorbing material. The materials used for the sheet metal lining have a fire reaction classification of B-s2, d0 (according to UNI EN 13501:2009) and Class 1 (according to UNI 8457 and UNI 9174).

Internal exchanger

Direct expansion finned coil exchanger made with copper pipes placed on staggered rows mechanically expanded to better adhere to the fin collar. The fins are made from aluminium with a corrugated surface and adequately distanced to ensure the maximum heat exchange efficiency.

External exchanger

Direct expansion heat exchanger made of stainless steel (AISI 316) brazed plates, featuring a high heat exchange surface and complete with external anti-condensation thermal insulation. The heat exchanger comes complete with:

- differential pressure switch, water side;
- water inlet temperature sensor;
- outlet water temperature sensor with antifreeze function.

Fan

Direct-driven, double-inlet centrifugal electric fan featuring an external rotor motor located at the center of the impeller in an aerodynamically optimal position and suspended on anti-vibration mounts. It uses forward-curved blades to achieve maximum efficiency and low noise operation, and is statically and dynamically balanced according to ISO 1940 grade 6.3 standards. The scroll, impeller, and frame are made of galvanized sheet steel (Sendzimir). For sizes from 17 to 101, the electronic motor control allows maintaining a constant airflow up to the maximum declared external static pressure for each of the 7 speeds selectable via the keypad.

Refrigeration circuit

Cooling circuit complete with:

- liquid receiver;
- 4-way cycle reversing valve;
- safety high pressure switch;
- low pressure transducer;
- safety high pressure switch;
- electronic expansion valve;
- mechanical filter.

Filtration

Pleated filter, featuring a galvanized sheet metal frame with welded galvanized wire mesh and a 100% polyester regenerable filter medium with PVC resin coating. The overall air filtration efficiency (ISO 16890 COARSE 40% - filtration class G2) is tested and certified in compliance with the current standard UNI EN ISO 16890. The filter is self-extinguishing (reaction to fire class F1 according to DIN 53 438-3).

Drain pan

Stainless steel AISI 304 condensate drain pan with anti-condensation insulation, welded, and equipped with a drain fitting. Condensate level sensor. Provide a trap that eliminates the negative pressure created by the fan, preventing air from being drawn through the drain pipe. Condensate drain trap to be provided by the installer.

Electrical panel

The electrical panel, including the microprocessor control, is located inside the unit, with access provided by an easily removable panel. The power section includes:

- power input terminals.

The control section includes:

- microprocessor control;
- self-diagnostic system;
- daily and weekly ON/OFF and set-point scheduling;
- terminal block, provided by the customer, for: cumulative alarms, fire/gas alarm, water side flow presence, remote controls, ON-OFF, summer/winter mode changeover, standard/ECO setting, high/normal/silent fan setting;
- water side antifreeze protection;
- water flow failure protection with differential pressure switch;
- return air temperature sensor with thermoregulation function;
- manual or automatic fan speed selection;
- dirty filter warning timer, periodically signalling the need for filter maintenance.

Technical data

Performances

Size			7	11	17	25	31	41	61	81	101
Nominal Airflow		m^3/h	420	580	850	1200	1700	2600	3200	4500	5500
Cooling A 27/19 W 30											
Cooling capacity	1	kW	2,22	3,12	4,43	6,39	8,62	12,0	16,0	22,7	26,8
Sensible capacity	1	kW	1,53	2,17	3,08	4,32	5,89	8,14	10,9	15,5	18,0
Compressor power input	1	kW	0,72	1,00	1,35	1,63	2,50	3,03	4,23	6,01	7,11
EER	1	-	3,08	3,12	3,28	3,93	3,45	3,96	3,78	3,77	3,78
Water flow rate	1	l/s	0,14	0,20	0,28	0,39	0,54	0,72	0,97	1,38	1,63
Water-side pressure drops	1	kPa	14,3	14,4	17,6	8,3	14,9	7,7	13,6	15,7	21,9
Heating A 20 W 20											
Heating capacity	2	kW	2,93	4,26	6,19	8,56	12,2	19,2	26,4	37,7	44,1
Compressor power input	2	kW	0,62	0,90	1,36	1,50	2,63	3,50	5,48	7,63	8,40
COP	2	-	4,73	4,74	4,55	5,71	4,63	5,50	4,81	4,94	5,25
Water-side temperature difference	2	K	3,8	4,0	4,1	4,3	4,2	5,2	5,0	5,2	5,2

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.
Contains fluorinated greenhouse gases (GWP 148)
A 27/19 W 30 = Unit inlet air temperature 27°C D.B. / 19°C W.B. Unit inlet water temperature 30°C
A 20 W 20 = Unit inlet air temperature 20°C Unit inlet water temperature 20°C

1. Exchanger inlet/outlet water temperature 30°C/35°C
2. The outlet water temperature depends on the cooling water flow-rate

Construction

Size			7	11	17	25	31	41	61	81	101
Compressor											
Type of compressor		-	ROT	ROT	ROT	ROT	ROT	SCROLL	SCROLL	SCROLL	SCROLL
N° compressors		Nr					1				
Refrigerant type		-					R454C				
Refrigerant charge		kg	0,4	0,5	0,9	1,0	1,4	1,4	1,6	2,7	2,9
Air handling section fan (supply)											
Supply fan type		-	CGF EC	CGF EC	CGF EC	CGF EC	CGF EC	CGF EC	CGF EC	CGF EC	CGF EC
Nominal air flow-rate		m^3/h	420	580	850	1200	1700	2600	3200	4500	5500
Max. static pressure supply fan	1	Pa	250	250	250	250	400	400	400	400	400
Minimum air flow-rate		m^3/h	300	300	700	800	800	1400	2000	2200	5000
Maximum air flow-rate		m^3/h	800	800	1100	2200	2600	4300	4300	5500	7000
Installed unit power		kW	0,15	0,15	0,65	0,65	0,65	2,02	2,02	1,28	3,35
Water side exchanger											
Type of exchanger			PHE	PHE	PHE	PHE	PHE	PHE	PHE	PHE	PHE
Nominal water flow-rate	2	l/s	0,14	0,19	0,27	0,38	0,52	0,7	0,95	1,34	1,6
Nominal pressure drops	3	kPa	14,3	14,4	17,6	8,3	14,9	7,7	13,6	15,7	21,9
Minimum water flow-rate		l/s	0,06	0,08	0,11	0,21	0,21	0,42	0,41	0,64	0,75
Maximum water flow-rate		l/s	0,26	0,38	0,49	1,0	1,0	1,92	1,92	2,5	2,5
Maximum working pressure		bar	36	36	36	36	36	36	36	36	36
Connections											
Water fittings	4	inch	1/2"	1/2"	1/2"	1"	1"	1"	1"	1 1/4"	1 1/4"
Condensate drain	5	mm	22	22	22	22	22	22	22	22	22
Power supply											
Standard power supply		V	230/1~/50	230/1~/50	230/1~/50	230/1~/50	230/1~/50	400/3~/50	400/3~/50	400/3~/50	400/3~/50

ROT = rotary compressor
CFG = Centrifugal fan
EC = electronic switching
PHE = plate exchanger

1. Static head at nominal flow-rate
2. Water flow-rate calculated in relation to nominal cooling performance
3. Total pressure drops for the standard unit (excluding optional hydraulic units). To calculate the total pressure drops, including any additional hydraulic components, please refer to the accessories section.
4. Water inlet/outlet diameters
5. Outer diameter

Technical data

Fan

Size			7	11	17	25	31	41	61	81	101
Nominal air flow-rate		m^3/h	420	580	850	1200	1700	2600	3200	4500	5500
Supply fan consumption	1	W	60	95	115	169	274	349	531	760	1170
SFP (Specific Fan Power)		$W/(m^3/s)$	510	590	490	510	580	480	600	610	770

1. Available static pressure 150 Pa

ErP data (Reg. EU 2016/2281)

Size			7	11	17	25	31	41	61	81	101
Cooling											
Cooling capacity (EN 14511)	1	kW	2,20	3,08	4,38	6,25	8,33	11,7	15,6	22,2	25,4
EER (EN 14511)	1	-	2,95	2,87	3,03	3,5	3,45	3,52	3,35	3,33	2,87
SEER	2	-	2,95	2,76	3,08	3,78	2,95	3,68	3,52	3,45	2,97
nsc	2	%	109,9	102,4	115,3	143,3	109,7	139,2	133,1	130,1	110,6
Water flow rate	1	l/s	0,14	0,19	0,27	0,38	0,52	0,7	0,95	1,34	1,6
Heating											
Heating capacity (EN 14511)	3	kW	2,97	4,33	6,28	8,71	12,5	19,5	26,8	38,3	45,9
COP (EN 14511)	3	-	4,56	4,45	4,32	5,71	4,26	5,15	4,52	4,64	4,53
SCOP	2	-	3,99	3,89	3,77	4,60	3,74	4,50	3,96	4,06	3,97
nsh	2	%	151,4	147,6	142,9	176,1	141,2	172,2	150,3	154,2	150,6
Available static pressure		Pa	50	50	50	50	50	75	75	100	100

Data referring to nominal flow-rate.

1. Performance in accordance with EN 14511-2022; indoor air temperature 27°C D.B./19°C W.B.; inlet/outlet water temperature 30°C/35°C
2. Data calculated in compliance with EN 14825:2022.
3. Performance in accordance with EN 14511-2022; indoor air temperature 20°C D.B.; water inlet/outlet temperature 20°C/17°C

Electrical data

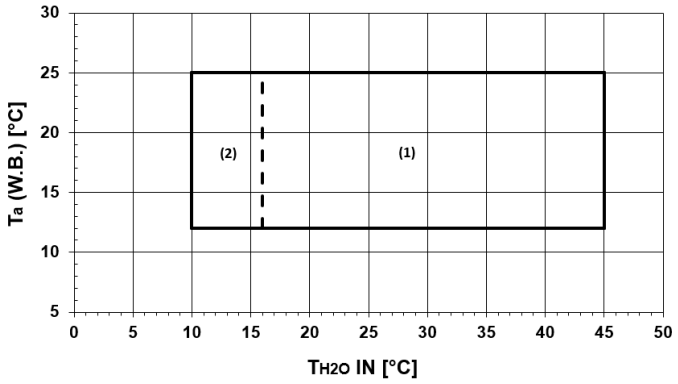
Size		7	11	17	25	31	41	61	81	101
F.L.A. - Full load current at max admissible conditions										
F.L.A. - Total	A	5	6,09	15,12	15,1	20,5	10,7	14,01	18,61	27,6
L.R.A. - Locked rotor amperes										
L.R.A. - Compressor	A	10,2	21,6	21,1	35,5	43,8	46	74,3	110	140
F.L.I. - Full load power input at max admissible conditions										
F.L.I. - Total	kW	1,04	1,47	2,88	3,7	4,42	6,43	8,35	11,06	19,08
M.I.C. Maximum inrush current										
M.I.C. - Value	A	12	23,4	25,72	40,12	48,42	48,81	77,11	112,81	149

Data refer to standard units.
Voltage variation: max +/- 10%

Technical data

Operating ranges

Cooling



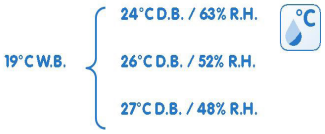
The limits are meant as an indication and they have been calculated by considering:
- general and non specific sizes
- standard airflow (Fan speed: standard)
- unrestricted positioning of the unit and its correct use
- operation at full load
- water temperature differential = 5°C

Ta = Temperature of the air entering the handling coil (°C)
Wet-bulb temperature measured (W.B. = wet bulb)

TH_2O= Inlet water temperature at the plate heat exchanger (°C)

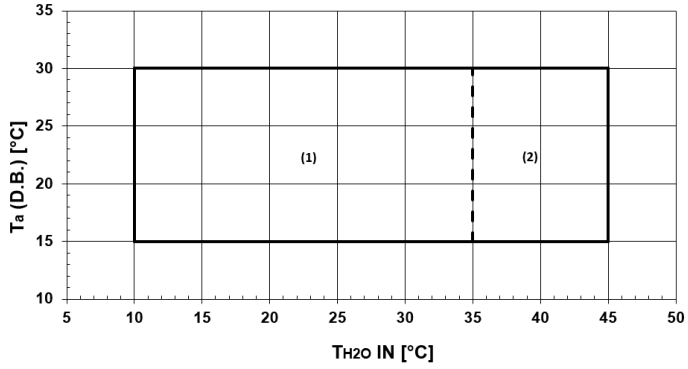
1. Standard unit operating range
2. Operating range with the 'V2MODX – two-way modulating valve for systems with disposable water' option, for example a well, groundwater or any other source of water at low temperature. With this option, the water supply system must be of the variable flow type.

Wet bulb temperature - example



⚠ The graph refers to a water temperature differential of 5°C. With a reduced water flow rate, the temperature differential is more than 5°C, so it is necessary to reduce the specified operating range for steps exceeding the nominal 5°C.
Example: with a temperature differential of 8°C, the upper TH2O limit is no longer 45°C, but 42°C.

Heating



The limits are meant as an indication and they have been calculated by considering:
- general and non specific sizes
- standard air-flow (Fan speed: standard)
- unrestricted positioning of the unit and its correct use
- operation at full load
- water temperature differential = 5°C

Ta = Temperature of the air entering the handling coil (°C)
Dry-bulb temperature measured (D.B. = dry bulb)

TH_2O= Inlet water temperature at the plate heat exchanger (°C)

1. Standard unit operating range
2. Standard unit operating range. In this range, the efficiency (COP) can be increased by fitting the unit with the 'V2MODX - two-way modulating valve for systems with disposable water' option, which controls the heat exchange with the source. This way, the performance of the unit is similar to the performance of the same unit with a supply water temperature (TH2O) of 25°C. This option requires a water supply system with a variable flow-rate.

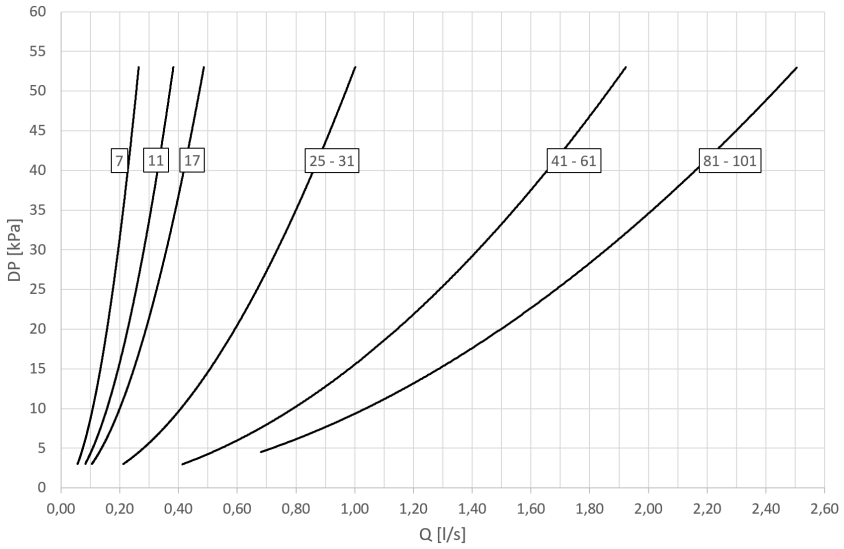
⚠ The graph refers to a water temperature differential of 5°C. With a reduced water flow-rate, the temperature differential is more than 5°C, so it is necessary to reduce the specified operating range for steps exceeding the nominal 5°C.
Example: with a temperature differential of 8°C, the lower TH20 limit is no longer 10°C but 13°C.

Pressure drops of optional components

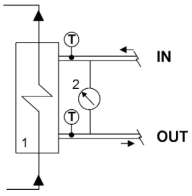
Size		7	11	17	25	31	41	61	81	101
F7 - F7 high efficiency air filter (ISO 16890 ePM1 55%)	Pa	21	32	48	73	31	54	70	87	110
F6CX - F6 pre-filtration (ISO 16890 ePM10 70%)	Pa	15	26	39	61	25	45	58	75	95

Pressure drops for filters with an average level of contamination.

Pressure drops of the hydraulic circuit of the standard unit



Q = water flow-rate (l/s)
DP = Water side pressure drops (kPa)



The standard unit comprises the following components:

1. Plate heat exchanger and temperature sensors for monitoring the water temperature at the inlet and outlet (to prevent the formation of ice and shut down the compressor when the water temperature falls below a set limit).
2. Water side differential pressure switch (to control the presence of the water flow-rate).

It does not require any further monitoring or control devices.

Option compatibility

REF	DESCRIPTION	COMPATIBILITY
Aeraulic circuit		
PCOSM	Constant supply airflow	√
FAS	Standard air filter	√
F7	High-efficiency F7 filter (ISO 16890 ePM1 55%)	0
TPFL	Filter-holder frame with lateral and bottom removal	√
F6CX	F6 pre-filtration (ISO 16890 ePM10 70%)	0
Water circuit		
BPH2OX	Bypass shut-off valve (water side)	◊
CDPX	Condensation drain pump	◊
FCVBX	Manual balancing valve	◊
V2MODX	Modulating two-way valve for once-through water system	◊
V2ONX	Two-way ON-OFF valve for variable flow	◊
VIFWX	Water filter and manual shut-off valve	◊
VIMANX	Manually operated shut-off valve	◊
CLS	Condensate level sensor	√
RPRC	Compressor vane refrigerant leak detector	0
Electric circuit		
CRC	Remote control with user interface	√
NCRC	Remote control with user interface: not required	0
MOB	RS485 serial port with Modbus protocol	√
CTEM	Ambient temperature control with probes on board the unit	√
SICE	Antifreeze sensor for the water leaving the exchanger	√
PM	Phase monitor	√
Installation		
AMMX	Spring antivibration mounts	◊

√ Standard mode
0 Optional component
◊ Accessory supplied separately (optional)

Standard mode

PCOSM

Constant supply airflow

Thanks to the use of fans with EC technology, the continuous modulation of the fan speed ensures the set air flow-rate, which remains constant when the pressure drops in the distribution system and the filter clogging varies, keeping the air distribution inside the rooms unchanged.

CRC

Remote control with user interface



The user interface allows full control of the unit's parameters. It integrates an ambient temperature sensor, enabling it to function as a zone thermostat.
It also includes a Wi-Fi module for management and monitoring via the dedicated Clivet EYE App.

Main functions:

- switching the unit on and off;
- manual or automatic changing of the operating mode (heat, cool and ventilation) and/or setpoint;
- setting the Dry mode
- manual or automatic changing of airflow (7 levels)
- configuration of the 'end-user' mode for interaction with the end user;
- setting the ECO and Silent modes;
- calculation and display of the unit's efficiency parameters, such as heating and cooling capacity, power input and performance coefficients (not suitable for legal metrology purposes)
- scheduling, according to daily and weekly time slots, of when the system is switched on or off and of the standard or economy setpoint;
- display of the alarm code and unit statuses;
- management of operating parameters;
- password protection to access the unit's parameters.

⚠ The device is designed to be connected to the unit's electrical panel (installation to be carried out by the customer) over a distance of up to 50 m
⚠ Provide a separate 12V DC power supply (to be installed by the customer) for a distance of up to 300 m
⚠ Connection of the user interface with 3 x 0.75 mm2 shielded cable for communication, 2 x 1 mm2 cable for the power supply if required

MOB

RS485 serial port with Modbus protocol

Allows serial connection to supervision systems, using Modbus RTU with RS485 serial port as a communication protocol.
It gives access to the entire list of operation variables, controls and alarms.

⚠ The total length of each individual serial line must not exceed 1000 m and the line must be connected in supervision bus type (input/output).
⚠ The serial port is on the unit itself

CTEM

Ambient temperature control with probes on board the unit

Thermoregulation is carried out on the basis of the temperature conditions of the return air flow measured by the probe installed on the unit.

PM

Phase monitor

The phase monitor allows the user to check the correct connection and unbalancing of the phases in the units powered by the three-phase system.
The monitor communicates with the control circuit and orders switching off of the unit in the event of the following: improper connection of the phases; the limit value referring to the unbalance between the phases is exceeded; over/undervoltage for a certain amount of time. As soon as the nominal line conditions are restored, the unit is automatically reset.
The device is installed and wired on the unit.

⚠ This feature is available as standard only for three-phase models

TPFL

Filter-holder frame with lateral and bottom removal

Device designed to facilitate the extraction of air filters. It consists of a galvanized steel frame equipped with access hatches for removing the filter from both the bottom and the side. The device is mounted on board the machine.

⚠ Provide suitable access spaces and clearance distances for disassembling the doors to remove the filter.

Accesories

F7

High-efficiency F7 filter (ISO 16890 ePM1 55%)

Class F7 ePM1 55% (ISO 16890) filters are made of folded fibreglass paper with constant calibrated spacing, mounted on a metal frame; the large filtering surface is designed to keep air side pressure drops low.
They are widely used in civil air conditioning systems and in industrial applications requesting an adequate yield with respect to fine dust and particles larger than 1 µm.
The filters must be replaced after reaching clogging limits with scheduled periodic maintenance.

- ⚠ This option determines a reduction in the available static head (air side).
- ⚠ To ensure high long-lasting filtration efficiency and increase the lifecycle of the filter, a suitable pre-filtration device for the outdoor air must be fitted. Device to be installed in duct outside the unit.

F6CX

F6 pre-filtration (ISO 16890 ePM10 70%)

The use of this kit allows fine particles in the outdoor air entering the unit to be filtered with ISO 16890 ePM10 70% efficiency. In this way, the onboard high-efficiency filtration systems are protected, ensuring high filtration efficiency over time and extending the filter's service life.
Installation can take place directly in the air intake section or, alternatively, along the air intake duct.
Filters must be replaced once fouling limits are reached through scheduled routine maintenance.

- ⚠ Accessory to be combined with F7 - High-efficiency F7 filter (ISO 16890 ePM1 55%) to meet the requirements of the Spanish RITE regulations

NCRC

Remote control with user interface: not required

Choosing this option results in the unit being supplied without a graphical control user interface, although it retains all the features.
Option that can be chosen when a supervision system or other remote management device is provided.

- ⚠ Remote control with user interface can still be used in conjunction with a supervision system by setting the writing priority in the parameters.

RPRC

Compressor vane refrigerant leak detector

The unit is equipped with a leak detector installed in the compressor compartment. The unit's targeted and optimized design generally reduces the risk of leaks, concentrating any residual risk within the compressor compartment itself.
The combination of this factor and the still air inside the compartment makes the device effective and prompt in detecting potential leaks.
Activation threshold at a concentration >15% LFL.
If a leak is detected, the unit is immediately shut down and a specific alarm is displayed.
In addition to minimizing environmental impact, this solution reduces the required frequency of periodic checks under the F-GAS regulation.

- ⚠ The unit is designed in accordance with the minimum requirements set by EN 378-2. The inclusion of this device is redundant with respect to these minimum requirements.
- ⚠ With reference to the use of A2L refrigerants, the application and installation of these units must comply with the safety standards specified in EN 378.
- ⚠ The presence of this detector does not impact the calculation of the minimum required room surface area for the served spaces.
- ⚠ The device is not part of the unit's primary safety chain.

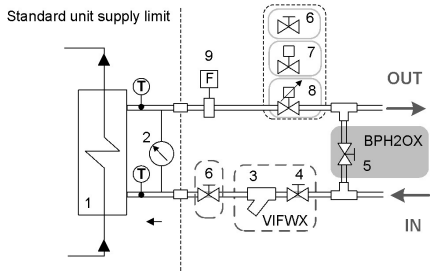
Accessories separately supplied

BPH2OX Bypass shut-off valve (water side)

The device allows for the by-pass of the exchanger inside the unit to wash (flux) the hydraulic circuit. This helps to prevent the exchanger from getting dirty. IT consists of a manually operated two-way valve.



Hydraulic connection diagram



1. Internal exchanger with temperature probes
2. Differential pressure switch
3. Steel mesh filter (included with the VIFWX accessory)
4. Manual shut-off valve (included in the VIFWX accessory)
5. By-pass shut-off valve (water side) (BPH2OX accessory)

6-7-8. Regulating / shut-off valves for the system (see the VIMANX, V2MODX and V2ONX accessories)

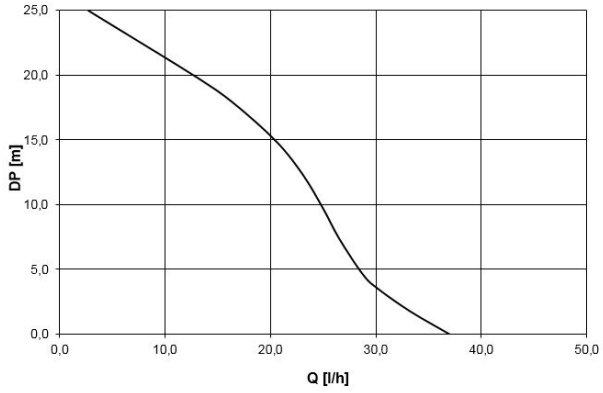
9. Flow switch

CDPX Condensation drain pump

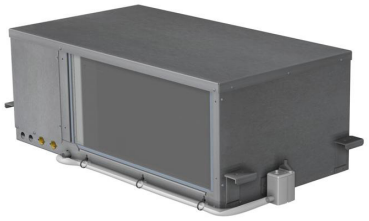
Device which enables condensation water to be discharged into the collection tray in case it cannot drain away due to gravity. It is necessary in installations where the external outlet is placed at a higher height than the condensate tray. The integrated sensor activates the pump only when necessary. If the water level in the tray should be greater than the pre-set limit, the unit stops the compressor to avoid the tray overflowing, signalling the fault with an alarm.

⚠ The device is designed to be installed outside the unit (to be carried out by the customer).
⚠ The pack includes the 1m condensation discharge flexible hose and the 1.5m power supply cable for connection to the electrical panel of the unit

Condensation drain pump



DP = Pressure drop (in metres of water column)
Q = Water flow [l/h]

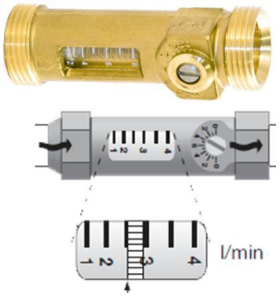


Example of mounting the pump

Accessories separately supplied

FCVBX **Manual balancing valve**

The device allows the temperature of the flow of water through the unit to be determined without the need for tables or measuring devices. This makes it possible to balance the flow of water in the circuit. The water flow rate is shown in real time on the dedicated display (in litres per minute). Calibration can be carried out easily even by untrained operators by turning the adjustment screw. It includes adaptors to accommodate the difference in diameter between the balancing valve and the water connections.



The pressure drop on the water side can be calculated using the formula

$$Dp\ [bar] = \left(\frac{3.6 \times Q\ [l/s]}{Kvs} \right)^2$$

Q = Water flow-rate[l/s]
Dp = Water side pressure drops (bar)
Kvs = Flow coefficient [m³/h]

AMMX **Spring antivibration mounts**

The spring anti-vibration mounts must be secured in their housings in the support brackets, whilst ensuring that the unit's overall dimensions remain unchanged. They consist of steel spring elements inserted in elastomer retaining plates.
Their function is to dampen the vibrations produced by the unit, thereby reducing the noise transmitted to the structures. They can dampen axial and tangential stress and their physical and mechanical properties remain constant over time thanks to the highly resistant materials they are made of.



⚠ To be installed by the customer.
⚠ The accessory includes the nuts for securing the item on the threaded rod (to be carried out by the customer).

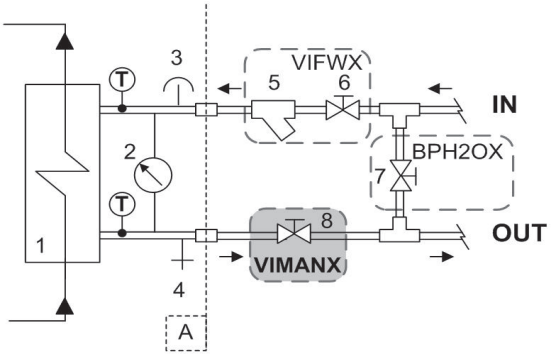
VIMANX **Manually operated shut-off valve**

A shut-off device that allows the unit to be hydraulically isolated for maintenance work or to prepare the system prior to connecting the unit. The manually operated valve must be fitted to the outlet water line.



⚠ Option to be installed outside the unit on the water outlet pipe of the exchanger. Hydraulic connection to be carried out by the Customer
⚠ Provide space to fit/remove the valve.

Hydraulic connection diagram



1. Internal exchanger with temperature probes
2. Differential pressure switch
3. Vent valve
4. Drainage bibcock
5. Steel mesh strainer (included with the VIFWX accessory)
6. Hand shut-off valve (included in the VIFWX accessory)
7. Shut-off valve for by-pass (water side) (BPH2OX accessory)
8. Hand shut-off valve (VIMANX accessory)

A - Standard unit supply limit

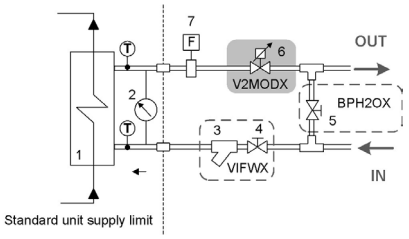
V2MODX Two-way modulating valve for systems with disposable water



This option is recommended for applications involving disposable water at relatively low temperatures (well water, groundwater or mains water) or with a variable-flow loop where the unit is required to operate in heating mode at high water temperatures or in cooling mode at low water temperatures.
The motorised modulating two-way valve placed at the outlet of the water side exchanger is supplied and controlled by the unit. Its operation is combined with that of the refrigeration circuit: modulation by a 0-10V signal based on the refrigerant pressure in the source side exchanger reduces water consumption and keeps the unit within its intended operating range in both cooling and heating mode.

- ⚠ The supplied valve ensures proper opening and closing for water differential pressures that do not exceed 800 kPa, i.e. 8 bar.
- ⚠ Option to be installed outside the unit on the water outlet pipe of the exchanger. Hydraulic connection to be carried out by the Customer.
- ⚠ Provide space to fit/remove the valve.
- ⚠ With this option, the unit is supplied complete with quick-connect electrical terminals for the power supply and automatic control of the valve.

Hydraulic connection diagram



1. Internal exchanger with temperature probes
2. Differential pressure switch
3. Steel mesh filter (included with the VIFWX accessory)
4. Manual shut-off valve (included in the VIFWX accessory)
5. By-pass shut-off valve (water side) (BPH2OX accessory)
6. Two-way modulating valve for systems with disposable water (V2MODX accessory)

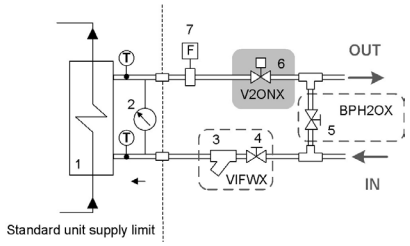
V2ONX Two-way ON-OFF valve for variable flow



Option recommended for applications with loop with a variable water flow-rate. It includes an ON/OFF motorised two-way valve located at the outlet of the exchanger on the water side, powered and controlled by the unit.
Its operation is linked to that of the refrigeration circuit: when the compressor is off, the valve remains closed, reducing water consumption.

- ⚠ Opt The supplied valve ensures proper opening and closing for water differential pressures that do not exceed 2000 kPa, i.e. 20 bar.
- ⚠ Option to be installed outside the unit on the water outlet pipe of the exchanger. Hydraulic connection to be carried out by the Customer.
- ⚠ Provide space to fit/remove the valve.
- ⚠ With this option, the unit is supplied complete with quick-connect electrical terminals for the power supply and automatic control of the valve.

Hydraulic connection diagram



1. Internal exchanger with temperature probes
2. Differential pressure switch
3. Steel mesh filter (included with the VIFWX accessory)
4. Manual shut-off valve (included in the VIFWX accessory)
5. By-pass shut-off valve (water side) (BPH2OX accessory)
6. Two-way ON-OFF valve for loopwith variable flow-rate (V2ONX accessory)
7. Flow switch

Accessories separately supplied

VIFWX **Steel mesh filter and manual shut-off valve**

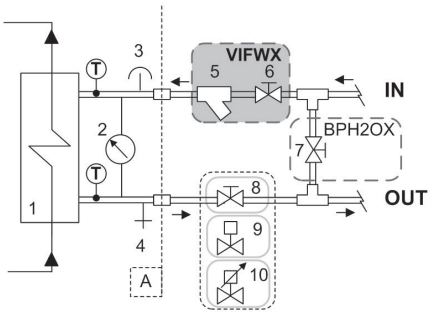
The device protects the plate heat exchanger from any impurities in the hydraulic circuit. The stainless steel mesh mechanical filter must be installed on the water inlet line. It is easily removable for routine maintenance and cleaning. It also includes the manually operated two-way shut-off valve located on the inlet line, required for periodic maintenance operations.





- ⚠ Hydraulic connection to be carried out by the Customer. Provide space to assemble/disassemble the components and for routine maintenance operations
- ⚠ Routine maintenance operations require a shut-off device on the unit's outlet pipe.
- ⚠ We therefore recommend combining it with one of the following options depending on the type of system: 'V20NX - On-off two-way valve for loop with variable flow-rate', 'V2MODX - Two-way modulating valve for systems with disposable water' or 'VIMANX - Manually operated shut-off valve'

Hydraulic connection diagram



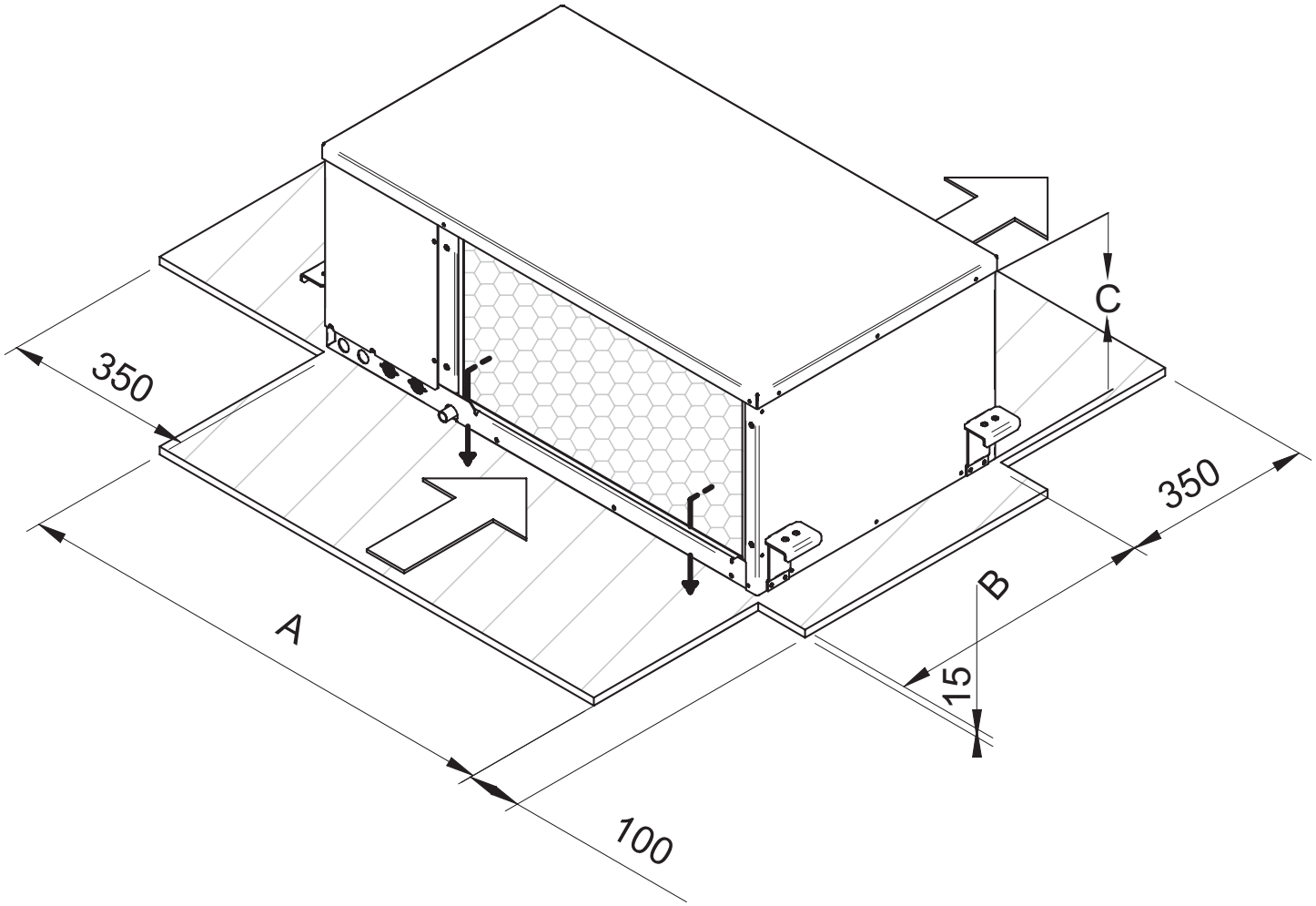
1. Internal exchanger with temperature probes
2. Differential pressure switch
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4. Drainage bibcock
5. Steel mesh strainer (included with the VIFWX accessory)
6. Hand shut-off valve (included in the VIFWX accessory)
7. Shut-off valve for by-pass (water side) (BPH2OX accessory)

8. 9. 10. Regulating / shut-off valves for the system (see the VIMANX, V2MODX and V2ONX accessories)

A. Standard unit supply limit

Dimensional drawings

EVH-M



size		7	11	17	25	31	41	61	81	101
A - Length	mm	875	875	875	875	1195	1195	1195	1380	1380
B - Depth	mm	669	669	669	669	779	779	779	904	904
C - Height	mm	390	390	490	490	590	590	590	705	705

For over 35 years we have been offering solutions to ensure sustainable comfort and the well-being of people and the environment

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