

HDC+

+ NEW FRESH AIR FOR YOUR BYTES

Minimize consumption / Maximize Efficacy



CONTENTS

+ Main features	page 04
+ Versions	page 12
HDC+ Front	page 14
HDC+ Side	page 16
HDC+ Rack	page 18
HDC+ Customised	page 20
+ Accessories	page 22
+ Technical specifications	page 28
+ Dimensions	page 30
HDC+ Front	page 30
HDC+ Side	page 31
HDC+ Rack	page 32

Certifications and guarantee

All the company's products in this catalogue have been designed and manufactured in compliance with the following certifications:

- UNE EN ISO 9001:2008
- UNE EN ISO 14001:2004
- (EC) Regulation No. 1221/2009 EMAS
- Machinery directive 2006/42/EC
- Low voltage directive 2006/95/EC
- Electromagnetic compatibility directive 2004/108/EC



SAIFOR is a leading company in the design, manufacturing and integration of high-performance solutions for Data Centers and Control Rooms.

The SAIFOR group designs and produces its products entirely in Barcelona (Spain). The production plant has state of the art machinery that gives us the greatest flexibility to adapt to the individual requirements of our clients, as well as strict compliance with our commitments and Environmental Responsibility Policies.

SAIFOR is positioned as an advanced technological company, offering highly reliable and durable products that strictly comply with the most demanding European quality standards.

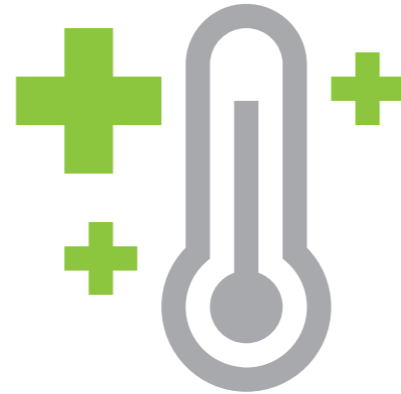
+ NOTE:

The technical data in this catalogue comes from results obtained in climatic tests done in two independent laboratories.

Main FEATURES

+ Managing hotspots

The design of this aisle type machine enables the installation of the cooling unit between the racks of a row, directly in areas where hotspots are generated. The air of the hot aisle, coming from the rear of the servers, is cooled and returned to the cold aisle, directly to the area where the inlets for cooling air of the servers. Applying airflow management strategies, it is possible to obtain great benefits in terms of energy efficiency and increasing cooling capacity and availability. This is especially appropriate for small and medium-sized centres and is an ideal complement to create high-density areas in installations with perimeter cooling.



+ Scalability

The modular design of the HDC+ unit enables scaling of the cooling power from 10.5 kW to 71 kW for the HDC+400 version and from 11 kW to 49.5 kW for the HDC+300 version. This power scalability is achieved by adding cooling modules; this operation can be carried out hot in a quick and easy way without tools and without the need for tools.

The scalability of HDC+ contributes to reducing initial purchasing costs (CAPEX), and enables easy increase of cooling capacity as the actual demand of the installation increases.

+ Flexibility

HDC+ can be installed in any open aisle or confined rack aisle configuration. As a result of its advanced design, it is perfectly integrated with SAIFOR products and is highly compatible with enclosures and racks made by other brands.

Its high performance and compact dimensions (300 and 400 mm wide) ensure a minimum footprint, thus increasing profitability of space in the datacentre. It has hydraulic connections at the top and bottom, making a false floor unnecessary.

+ Power

HDC+ is a compact, robust and reliable machine, with outstanding cooling performance in its category. Up to 71 kW in the HDC+ 400 family and up to 49.5 kW in the HDC+ 300 family.

+ Energy efficiency

HDC+ is a high performance cooling machine that can precisely adjust the airflow and power as required; reducing energy consumption and significantly increasing the energy efficiency of the datacentre.

HDC+ combines complex algorithms with state of the art components such as electronic valves, EC high efficiency fans that comply with European directive ErP2015, high accuracy sensors and heat exchangers that can handle high water temperature (longer free cooling time) and with minimum loss of load.

HDC+ incorporates the **Eco Mode**, designed to enter the parameters of the equipment installed and for the machine to automatically regulate its capacity according to the load installed. This is ideal for partially occupied installations or areas, to avoid overcooling.

HDC+ increases total airflow, especially side flow, combining multiple design strategies to maximise capacity, minimise load losses and reduce consumption. The interior has been redesigned, increasing perforations in doors and cooling modules, which have been designed to increase side flow, incorporating advanced EC fans of greater capacity.



+ Redundancy and Reliability

HDC+ is very reliable.

It has a double electrical input line A-B as standard, combined with an automatic switch to guarantee continuity and redundancy in the electrical system. The power lines of the fans are independent.

HDC+ incorporates a Load-sharing Mode, offering cooling level redundancy that enables the creation of work groups by interconnecting HDC+ units to compensate for possible failures of a unit with the rest of the machines.

MAIN FEATURES

+ Free Cooling

HDC+ has been designed to work with high water inlet temperatures (12- 20° C range). It is especially recommendable for installing in datacentres located in climatic areas that allow the design and installation of Freecooling cooling systems, drastically reducing

cooling costs and increasing the profitability of the datacentre.

By special order, units with a heat exchanger designed for lower water inlet temperatures (7-12° C) can be supplied.



+ Humidification

The unit is prepared for integration with a humidifier. Especially recommendable for dry environments where an active control of humidity is necessary.

In that case, the system would incorporate a submerged electrode humidifier and a accuracy humidity sensor to guarantee precise supply of humidity necessary in the environment.

+ Customization

The modular design and wide range of accessories allows precise and guaranteed adaptation to the requirements of each installation. HDC+ can be configured with a humidifier, humidity sensor, flowmeter, air filters, LED trims, droplet separator,

condensate pump, water leak detector, piping expansion, 2 or 3-way valves, communication modules with multiple protocols, 4.3" touch screen and optionally three-phase or single phase power connection.

+ Installation and maintenance



Interior design with optimised obstacle-free space to facilitate installation and maintenance from the front and rear of the machine. The connection box is compact and totally accessible, it includes built-in connectors for quick and safe connection.

Optionally it is available with extension piping to facilitate upper or lower hydraulic connection.

Replaceable components such as the cooling modules and G4 cleanable air filters can be replaced without tools and without having to stop the machine.

All the optional accessories chosen at the moment of ordering will be supplied assembled and verified in the factory.

+ Operation

- + **AUTOMATIC mode.** Normal operation of the unit, automatically regulating the valve opening and the speed fans.
- + **MANUAL mode.** Useful in start up situations, maintenance or correct operation testing.
- + **ECO mode.** Precise adjustment of the unit's operation, according to the active equipment, optimizing unit energy consumption.
- + **MAINTENANCE mode.** Temporary automatic switching to reduced airflow for user comfort during a pre-established period.

+ Total availability

- + **LOADSHARING Mode.** Enables the creation of groups of up to 10 bus connected units. Inter-coordination to compensate for lack of power due to the failure of a unit.
- + **FAIL-SAFE mode.** In case of failure of the electronic control unit, enables manual adjustment of the valve and fan speed.
- + **FAN FAILURE mode.** Increases the speed of the fans to compensate for the failure of one or more fans.
- + **EMERGENCY mode.** Manages the unit in critical cases such as failure of coolant supply or readings outside the pre-established threshold.

MAIN COMPONENTS

+ Control



The machine core. Fitted with the latest control. Robust and reliable, the management unit handles and monitors all relevant parameters for precise temperature, humidity and consumption adjustments. It has dry contact external signals for general machine stoppage or emergency stops due to the detection of smoke/fire. Notification of alarms by email and proactive management of maintenance warnings for replacing, checking and cleaning components. Safety levels for user and administrator.

+ EC Fans



State of the art fans incorporating the latest technological developments. Compliant with European directive ErP2015. EC technology brushless motors, with precise and continuous fan speed control following an adjusted curve, without steps, minimising fan energy consumption.

The fan blades have an improved curvature and are made of PP composite plastic reinforced with glass fibre, thus reducing air friction and noise as well as increasing the amount of air moved.

+ LED Trims



SAIFOR incorporates LED technology for improving the functionality and aesthetics of the installations. LED lighting to easily identify units in operation, provide lighting for the auxiliary service, visually marking cold and hot aisles. Standard in the HDC front Premium version, optional in the basic model.

+ Electronic valve



Ball valve, with electronic modulating adjustment, with an integrated control plate enabling precise adjustment of valve opening, and which together with a PID algorithm specifically developed for the HDC+ unit, enables precise on demand adjustment of water flow for the hydronic system.

+ Flowmeter



Vortex type flowmeter. Low pressure loss combined with flow reading without mobile elements, guarantees high reliability in operation as well as precise reading. Unaffected by dirt. Built in fibre glass reinforced plastic material to ensure the flowmeter will not corrode, significantly extending its service life.

+ Humidifier



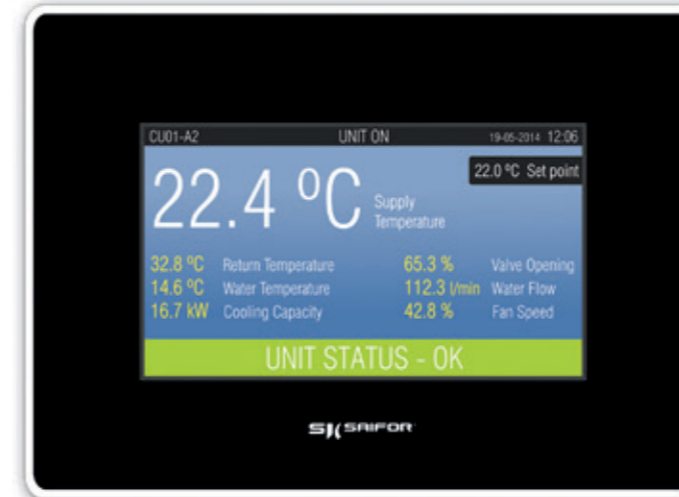
Submerged electrode humidifier. Together with the humidity sensor and the specific algorithm, precise modulation of water vapour added to the environment as needed is guaranteed. Works with drinking water. Does not require demineralised water. Incorporates its own controlled driver to independently manage the humidifier.

+ Communication

The control allows the HDC+ unit to communicate with DCIM and BMS of the property. Can be configured with SNMP, HTML, Modbus RTU, Modbus IP, BACNet, BACNet IP communication protocols. By special request it can communicate with LonWorks, CANBus, Konnex and TLAN protocols.

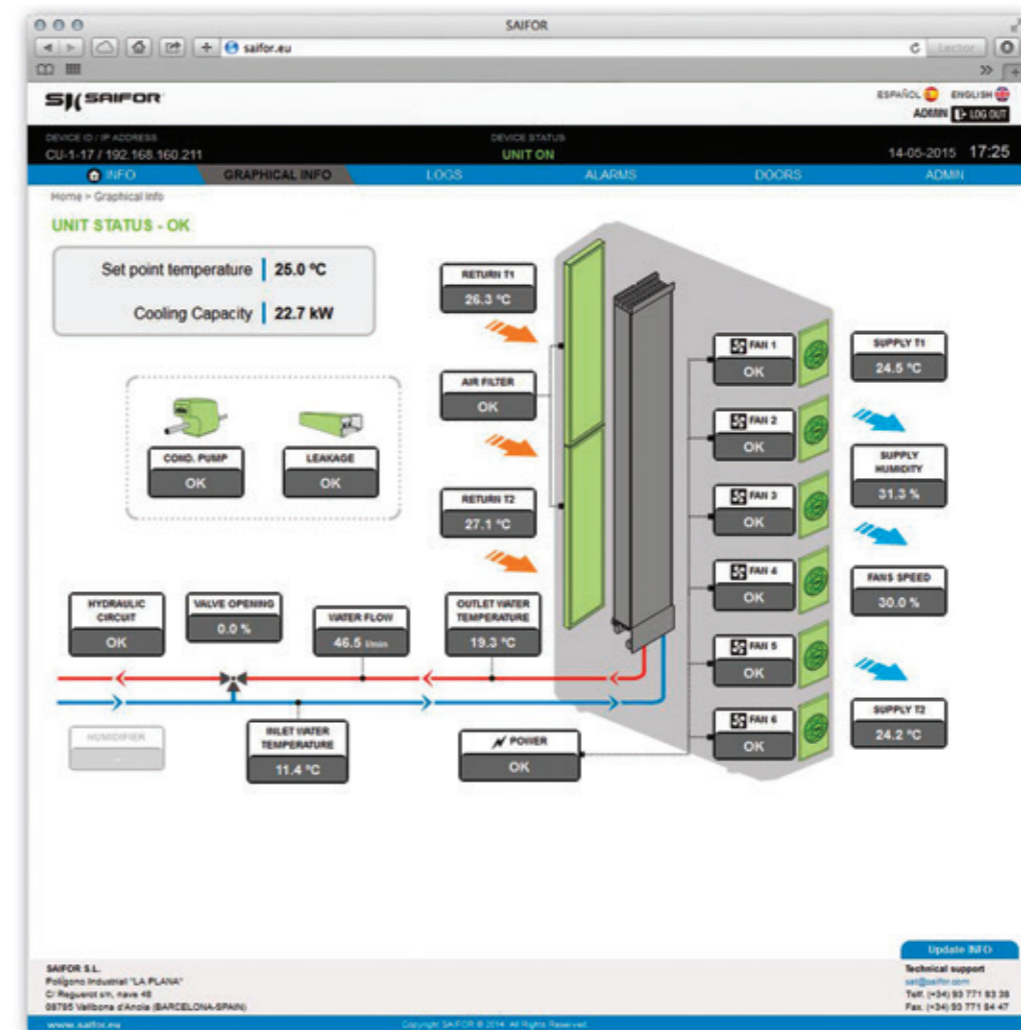


+ Remote website management



+ 4.3" touch screen

4.3" TFT touch screen display with 65000 colours and software designed to offer a simple and intuitive user interface. Enabling monitoring and management of the HDC+ unit in a user friendly manner. Installed on the front, for direct management of the unit in the room.



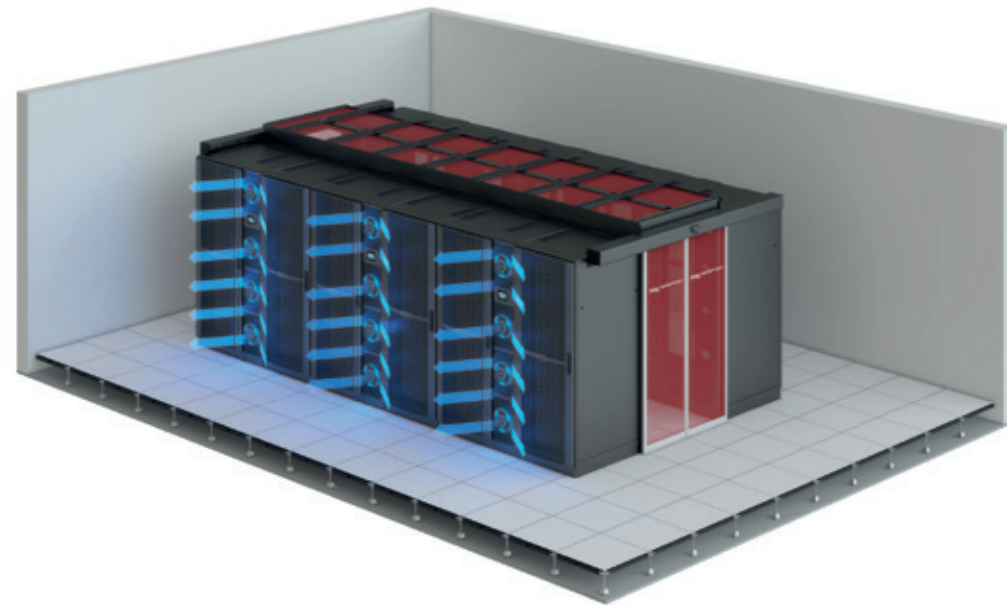
The Ethernet communication module has a built in remote website management for the machine. Enables remote monitoring and control of the most important parameters of the unit.

OPERATION SCHEMES OF THE HDC+ RANGE

+ HDC+ Front

Front air discharge, regulated by the EC cooling modules carried out directly towards the room in the case of hot aisles or towards the confined aisle in a cold aisle scenario.

The unit sucks air from the hot aisles and cools it, returning it to the cold aisle at server inlet temperature.



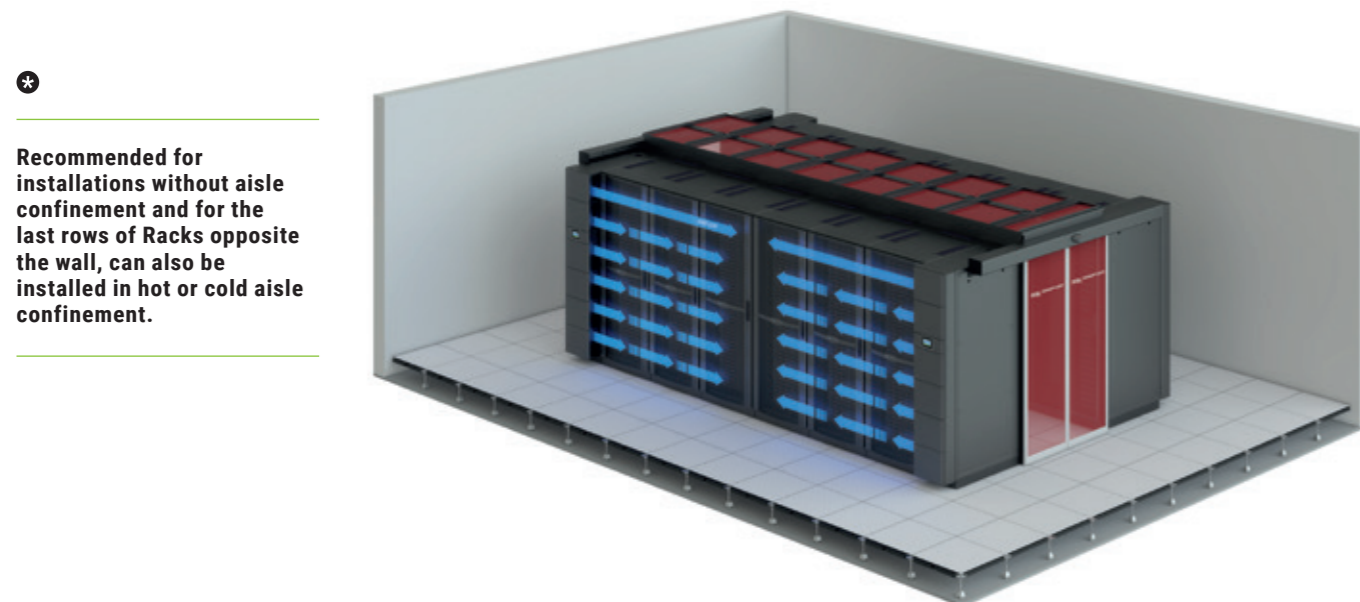
* The new design of the cooling modules increases airflow and improves the side exit angle of the airflow. Ideal for installing with confinement of hot or cold aisles.

+ HDC+ Side

HDC+ Side is an alternative concept for the layout of cooling units in rows of aisles. This version of the cooling unit moves the EC cooling modules to a position standing out in the row, in front of the racks. These cooling modules have outlets on the sides. Thus

the air is moved laterally, directly at the front of the racks.

According to the needs of the installation, it can provide cooling for up to 6 racks located in parallel.



* Recommended for installations without aisle confinement and for the last rows of Racks opposite the wall, can also be installed in hot or cold aisle confinement.

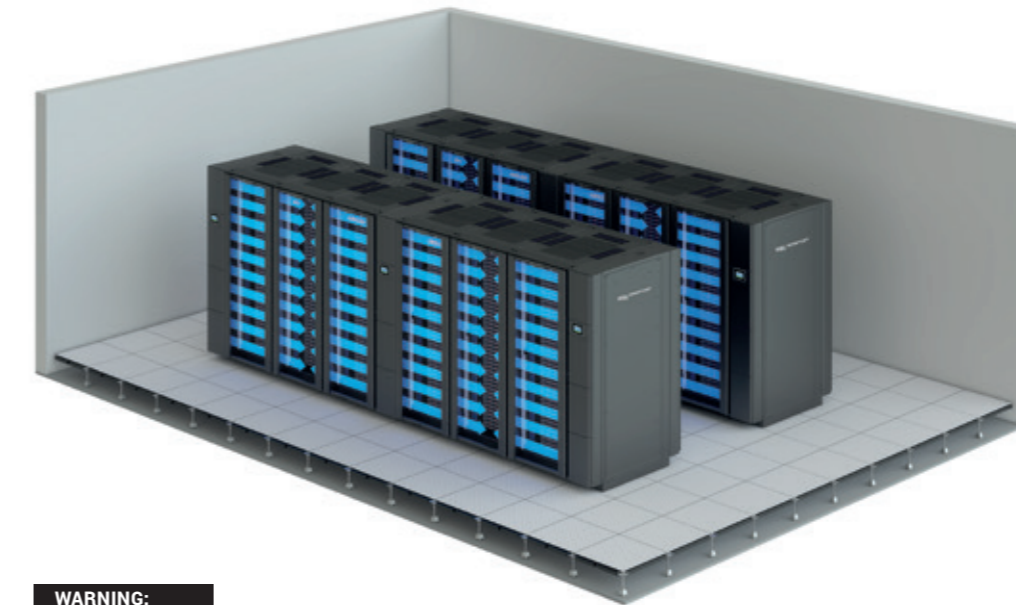
+ HDC+ Rack

This type of configuration combines the HDC+ cooling unit and the IT equipment rack in the same enclosed space, isolated from outside.

This direct cooling increases energy savings as it reduces the amount of air to be treated.

As the servers are insulated from the outside, mixing outside air with interior air is avoided, with the resulting increased efficacy.

Ideal for high density installations (>20 kW/rack) when used at full load and for Micro data centres if partial load is used.



* As it is an isolated system, independent from the room, it can be used in small installations, making use of rooms that were not specifically designed for typical datacentre operation with the minimum of adaptation.

WARNING:

HDC+ RACK MAKES USE OF 100% OF THE INTERIOR RACK SPACE, RECIRCULATING THE AIR THROUGH THE ADDITIONAL SAIFOR AIRFRAME STRUCTURE, ADDED TO THE RACK IN FRONT AND BEHIND.

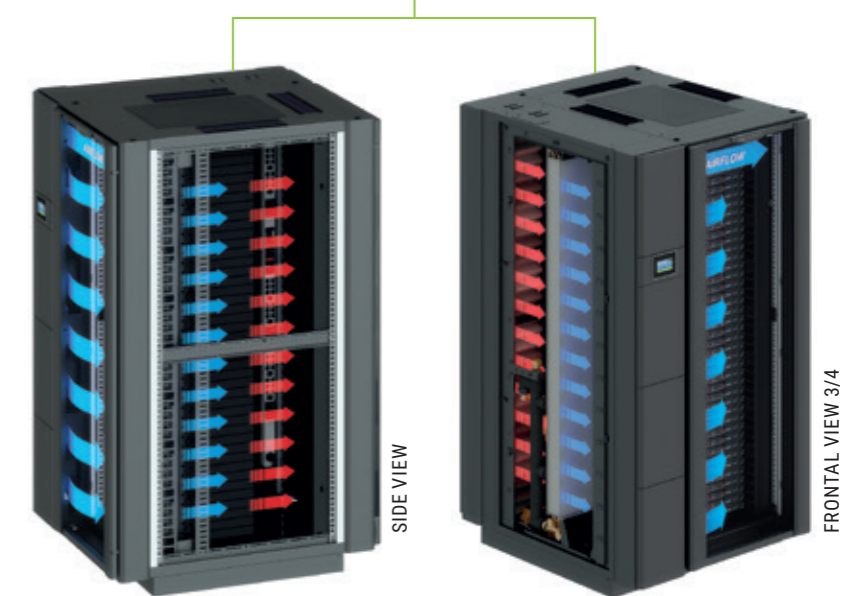
RACK EQUIPPED WITH AN AIRFRAME IN THE FRONT AND REAR

With the additional **AIRFRAME** structure, the 19" rack, regardless of its depth, (1000/1200 mm), can use the interior space entirely, without obstructing recirculation of air to the machine.

For the layout to work, it is indispensable for the rack to be well organised, with wiring, power supply and airflow systems that avoid recirculation of air in the rack.

It is recommended that the rack has a minimum free depth for servers of approx. 700-750 mm.

To this space, you must add approx. 150-200 mm for wiring and power supply (Pdu's).



NOTE

Unlike other manufacturers, in the SAIFOR AIRFRAME structure, the air circuit is free of obstructions to the air intake servers, therefore minimises load and cooling capacity losses caused by obstructions in air movement. The machines that suck and blow the air from the side panels offer a very small space for the correct installation of equipment, pdu's and wiring in the rack, which can cause important obstructions in airflow, with a substantial loss of load, increasing consumption and reducing cooling capacity.

HDC+ Versions

+ HDC+

The new HDC+ aisle cooling machine is a natural evolution of its reliable HDC predecessor, offering more power and modularity to adapt even better to the needs of each installation.

Thanks to its state of the art heat exchanger, HDC+ can work with high cooling water and air temperatures, thus contributing to the overall efficiency of the installation.

It is ideal for small and medium-sized datacentres configured in rows of hot/cold aisle racks, and is an ideal complement to an existing cooling system to neutralize hotspots when CRACs are insufficient.

Although it is not indispensable, it is highly recommendable to combine HDC+ Front units with the air CUBO containment system. The CUBO containment system contains the air in the confined aisle to avoid hot and cold air mixing as well as air recirculation air that is common in data centres.

This physical barrier enables the set point temperatures of the machines to be increased, thus reducing the consumption of the equipment that cools the water and therefore increasing the efficacy of the global cooling system in the data centre. Another advantage of the CUBO system combined with HDC+ units is flexibility to carry out n+1 redundancy at the cooling unit level in contained aisles.



+ HDC+ Front

This HDC+ version incorporates a new design for the front discharge EC cooling units. After several aerodynamic tests, a design has been obtained that increases airflow and its side distribution in the cold aisle.

The optimised design of the powerful cooling modules need no door and takes the maximum advantage of the machine's width in order to incorporate larger fans. Overall consumption is significantly reduced at medium and low speeds, and airflow is increased to **9050 m3/h** for **HDC+ 400** and **6200 m3/h** for **HDC+ 300**.

In Premium configurations and optional for basic configurations, the front cooling modules incorporate an LED trim to give the unit a state of the art appearance and at the same time help servicing illumination, identifying the distribution of aisles and machines in operation.



+ HDC+ Side

This design guarantees maximum airflow and the greatest operational performance in each machine, thus contributing to improve operations and availability per m2 in the data centre.

HDC+ 400 produces a maximum airflow of up to 10.350 m3/h, with a capacity of up to 71 kW, the values for HDC+ 300 being a maximum airflow of 7,050 m3/h, with a nominal capacity of up to 49.5 kW.

The side distribution of air minimises mixtures of airflow and turbulences in the aisles. It also reduced losses due to deflection. As a whole, this achieves greater performance and efficiency in each machine.

Can be installed between racks or at the beginning of the row. Valid for hot and cold confinement aisles.



Each HDC+ Side unit has the capacity to cool up to 6 racks in line, as required by the installation.

+ HDC+ Rack

It has been designed to isolate the rack from the external environment.

HDC+ incorporates as standard a system for automatically opening the doors in case of emergency, enabling the doors to be opened and evacuating heat, thus gaining critical failure response time.

HDC+ Rack includes access control by authentication (display/remote), and enables the status of the hermetic doors to be monitored, so as to avoid a door staying open and the mixture of interior air with that of the room.

It has insulating panels on the sides, resulting additionally in a notable reduction of the noise produced in the room and improving comfort when installed in the proximity of the users.

Thanks to the modular fan system, cooling capacity can be scaled according to the increase in IT equipment fitted in the rack, therefore it is ideal for high density in Premium version, and for micro data centres in basic versions.



HDC+ Front



+ HDC+ Front BASIC

The HDC+ Front version comes in 2 sizes.

HDC+ 300: up to 45.5 kW, HDC+ 400: up to 65.5 kW.

Both models include the following as standard:

- + Coolant fluid: water
- + EC fans with proportional speed adjustment. Independent. Rapid fitting, no tools needed.
- + 2-way proportional electronic valve.
- + High performance heat exchanger.
- + Hydraulic circuit discharge valve.
- + Air bleeder.
- + Stainless steel tray for condensates.
- + Dual power supply for electrical redundancy (single-phase version).
- + Power supply: 230 Vac, 50/60 Hz
- + 2 blown air temperature sensors.
- + 2 return air temperature sensors.
- + 2 water temperature sensors.
- + 4.3" touch screen display built into the front.
- + Water leak detector.
- + Zigzag type, G4 level air filters in a metal casing. Cleanable.
- + Panels and piping covered in thermal insulation material.
- + Built-in wheels and feet.
- + Rear cooling door.
- + Junction box with easy access.
- + 2 cooling modules on HDC+ 300.
- + 3 cooling modules on HDC+ 400.

+ HDC+ Front PREMIUM

The following components are added to the BASIC version:

- + 2 HDC+ 300 modules/ 4 in total.
- + 3 HDC+ 400 modules/ 6 in total.
- + LED trims in cooling modules.
- + Condensate pump: 8 l/h at 15 m. Includes 5 m long tube.
- + ETHERNET communication module with integrated remote website management.
- + Flowmeter.
- + 1 humidity sensor.

► Optional components

The following accessories are available to complement the BASIC and PREMIUM versions:

- 3-way valve (replacing the 2-way valve).
- 3 kg/h humidifier (single-phase and three-phase version).
- Upper or lower piping extension kit.
- ModBus RTU communication module.
- 90 mm skirting.
- Acoustic warning.
- Portable maintenance console.

(For more details see pages 22-27 in the catalogue.)

VERSIONS

Open configuration operation, it is recommendable to combine the HDC+ Front units with the SAIFOR CUBO air containment system.



The new control software enables configuration of specific parameters for emergency mode, allowing HDC+ to be used either hot or cold confinement aisles.

The choice of confining hot or cold aisles, despite the fact that each scenario has its own advantages, will depend to a great extent on the design of the room, equipment to be installed and/or if there is equipment already installed.



* HDC+ HACS

The hot aisle containment increases air Delta T, therefore the cold machines increase their cooling power.

* HDC+ CACS

The cold aisle containment enables a constant interior temperature, therefore in the same installation there can be high /medium/low density CUBO's.

			HDC+ 300 FRONT		HDC+ 400 FRONT	
			BASIC	PREMIUM	BASIC	PREMIUM
			Cooling power	26,5 KW	45,5 KW	38 KW
		No. of fans	2	4	3	6
Power supply	Height	Depth				
1 PHASE	42U	1000	C.0087673	C.0087681	C.0087689	C.0087697
		1200	C.0087674	C.0087682	C.0087690	C.0087698
	47U	1000	C.0087675	C.0087683	C.0087691	C.0087699
		1200	C.0087676	C.0087684	C.0087692	C.0087700
3 PHASES	42U	1000	C.0087677	C.0087685	C.0087693	C.0087701
		1200	C.0087678	C.0087686	C.0087694	C.0087702
	47U	1000	C.0087679	C.0087687	C.0087695	C.0087703
		1200	C.0087680	C.0087688	C.0087696	C.0087704

Data calculated with water inlet temperature 12° C / air Delta T at 22° C

HDC+ Side



+ HDC+ Side BASIC

The HDC+ Front version comes in 2 sizes.
HDC+ 300: up to 49.5 kW, HDC+ 400: up to 71.0 kW.
 Both models include the following as standard:

- + Coolant fluid: water
- + EC fans with proportional speed adjustment. Independent. Rapid fitting, no tools needed.
- + 2-way proportional electronic valve.
- + High performance heat exchanger.
- + Hydraulic circuit discharge valve.
- + Air bleeder.
- + Stainless steel tray for condensates.
- + Dual power supply for electrical redundancy (single-phase version).
- + Power supply: 230 Vac, 50/60 Hz
- + 2 blown air temperature sensors.
- + 2 return air temperature sensors.
- + 2 water temperature sensors.
- + 4.3" touch screen display built into the front.
- + Water leak detector.
- + Zigzag type, G4 level air filters in a metal casing. Cleanable.
- + Panels and piping covered in thermal insulation material.
- + Built-in wheels and feet.
- + Rear cooling door.
- + Easily accessible connection box.
- + 2 cooling modules on HDC+300.
- + 3 cooling modules on HDC+ 400.

+ HDC+ Lateral PREMIUM

The following components are added to the BASIC version:

- + 2 HDC+ 300 modules/ 4 in total.
- + 3 HDC+ 400 modules/ 6 in total.
- + LED trims in cooling modules.
- + Condensate pump: 8 l/h at 15 m. Includes 5 m long tube.
- + ETHERNET communication module with integrated remote website management.
- + Flowmeter.
- + 1 humidity sensor.

► Optional components

The following accessories are available to complement the BASIC and PREMIUM versions:

- 3-way valve (replacing the 2-way valve).
- 3 kg/h humidifier (single-phase and three-phase version).
- Upper or lower piping extension kit.
- ModBus RTU communication module.
- 90 mm skirting.
- Acoustic warning.
- Portable maintenance console.

(For more details see pages 22-27 in the catalogue.)

VERSIONS

This version of the cooling unit moves the EC cooling modules to a position standing out in the row, in front of the racks. These cooling modules have outlets on the sides to blow air sideways, directly onto the front of the racks.

This system provides fresh air as needed by the installation, up to 6 racks.



As it creates a curtain of cold air, it enables this unit to be combined with the traditional cold aisle systems without air containment.

For greater efficiency of the system, the use of CUBO air containment is recommended.



			HDC+ 300 SIDE		HDC+ 400 SIDE	
			BASIC	PREMIUM	BASIC	PREMIUM
			Cooling power	26,5 KW	49,5 KW	38,5 KW
		No. of fans	2	4	3	6
Power supply	Height	Depth				
1 PHASE	42U	1000	C.0087705	C.0087713	C.0087721	C.0087729
		1200	C.0087706	C.0087714	C.0087722	C.0087730
	47U	1000	C.0087707	C.0087715	C.0087723	C.0087731
		1200	C.0087708	C.0087716	C.0087724	C.0087732
3 PHASES	42U	1000	C.0087709	C.0087717	C.0087725	C.0087733
		1200	C.0087710	C.0087718	C.0087726	C.0087734
	47U	1000	C.0087711	C.0087719	C.0087727	C.0087735
		1200	C.0087712	C.0087720	C.0087728	C.0087736

Data calculated with water inlet temperature 12° C / air Delta T at 22° C

HDC+ Rack



+ HDC+ Rack BASIC

The HDC+ Rack version is supplied in a single size -300 mm-, but with two air outlet options:

HDC+ 300 RACK 1 Outlet: up to 40 kW
HDC+ 300 RACK 2 Outlet: up to 49.5 kW

Includes the following features:

- + Coolant fluid: water
- + EC fans with proportional speed adjustment. Independent. Rapid fitting, no tools needed.
- + Hydraulic circuit discharge valve.
- + Air bleeder.
- + Stainless steel tray for condensates.
- + Dual power supply for electrical redundancy (single-phase version).
- + Power supply: 230 Vac, 50/60 Hz
- + 2 blown air temperature sensors.
- + 2 return air temperature sensors.
- + 2 water temperature sensors.
- + 4.3" touch screen display built into the front.
- + Front and rear frames of the HDC+ unit with side air outlets (blind side covers are included).
- + Zigzag type, G4 level air filters in a metal casing. Cleanable.
- + Panels and piping covered in thermal insulation material.
- + Built-in wheels and feet.
- + 2 cooling modules on HDC+300.
- + 2-way proportional electronic valve.
- + High performance heat exchanger.
- + Water leak detector.

+ HDC+ Rack PREMIUM

The following components are added to the BASIC version:

- + 2 HDC+ 300 modules/ 4 in total.
- + Condensate pump: 8 l/h at 15 m. Includes 5 m long tube.
- + ETHERNET communication module with integrated remote website management.
- + Flowmeter.
- + 1 humidity sensor.

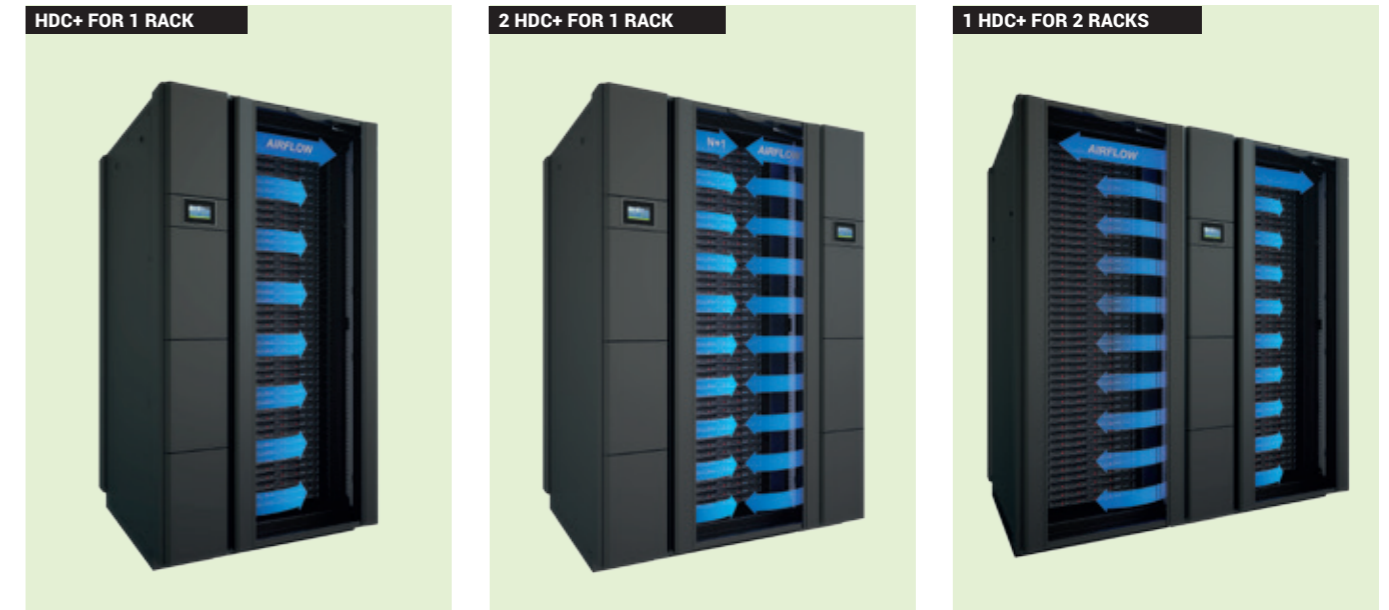
► Optional components

The following accessories are available to complement the BASIC and PREMIUM versions:

- 3-way valve (replacing the 2-way valve).
- 3 kg/h humidifier (single-phase and three-phase version).
- Upper or lower piping extension kit.
- ModBus RTU communication module.
- 90 mm skirting.
- Acoustic warning.
- Portable maintenance console.

(For more details see pages 22-27 in the catalogue.)

VERSIONS



			HDC+ 300 RACK			
			1 OUTLET		2 OUTLETS	
			BASIC	PREMIUM	BASIC	PREMIUM
Power supply	Height	Depth	Cooling power			
			No. of fans			
1 PHASE	42U	1000	C.0087737	C.0087745	C.0087753	C.0087761
		1200	C.0087738	C.0087746	C.0087754	C.0087762
	47U	1000	C.0087739	C.0087747	C.0087755	C.0087763
		1200	C.0087740	C.0087748	C.0087756	C.0087764
3 PHASES	42U	1000	C.0087741	C.0087749	C.0087757	C.0087765
		1200	C.0087742	C.0087750	C.0087758	C.0087766
	47U	1000	C.0087743	C.0087751	C.0087759	C.0087767
		1200	C.0087744	C.0087752	C.0087760	C.0087768

Data calculated with water inlet temperature 12° C / air Delta T at 22° C



IMPORTANT

It is necessary to complement the code of the chosen HDC+Rack unit, with the corresponding rack adaptation code/s and the rack codes, e.g.:

HDC+ UNIT CODE + RACK CODE/S + 150 mm AIRFRAME KIT CODE/S + RACK DOORS

Note. The AIRFRAME rack adaptation code is composed of:

E.0022139	150 mm FRAMES KIT+RACK DOORS, 42U 600
E.0022140	150 mm FRAMES KIT+RACK DOORS, 42U 800
E.0022141	150 mm FRAMES KIT+RACK DOORS, 47U 600
E.0022142	150 mm FRAMES KIT+RACK DOORS, 47U 800

x1 front rack frame with an emergency opening glass door.

x1 rear rack frame with a blind emergency opening door. Customise your machine as needed.



HDC+ Customised



+ Customise your machine as needed

The innovative modular design of HDC+ enables the machine to be adapted to the real needs of any installation.

On the other hand, it significantly contributes to reducing operational costs, using only the energy strictly necessary for the operations being carried out.

The modular design also implies adaptability and flexibility, in this manner, apart from standard configurations, detailed below, SAIFOR offers the possibility to configure each of the machines independently, in order to adapt to the cooling needs of each of the rooms or aisles.

The following page contains the details for configuring HDC+ units, once configured, you only have to contact the commercial department to validate the configuration and receive your technical-economic proposal.

STANDARD EQUIPMENT	BASIC	PREMIUM
EC FANS	YES	YES
ELECTRONIC VALVE	2V	2V
DOUBLE ELECTRICAL INPUT LINE (SINGLE-PHASE VERSION)	YES	YES
2 BLOWN AIR TEMPERATURE SENSORS	YES	YES
2 RETURN AIR TEMPERATURE SENSORS	YES	YES
2 WATER SENSORS	YES	YES
G4 LEVEL AIR FILTERS	YES	YES
CONDENSATE PUMP, 8 l/h AT 15 m	YES	YES
4.3" GRAPHIC TOUCH SCREEN DISPLAY	YES	YES
WATER LEAK DETECTOR	YES	YES
WHEELS AND FEET	YES	YES
ETHERNET COMMUNICATION MODULE	-	YES
1 HUMIDITY SENSOR	-	YES
FLOWMETER	-	YES

HDC+ STEP BY STEP CONFIGURATION

1 - DIMENSIONS			2 - VERSION	
WIDTH	HEIGHT	DEPTH	FR	FRONT
300	42U	1000	LA	SIDE
400	47U	1200	R1	1 OUTLET RACK VERSION
			R2	2 OUTLET RACK VERSION

3 - FANS			4 - AIR FILTERS		5 - REAR DOOR	
n° FANS	TRIMS		F	WITH AIR FILTER	0	WITHOUT REAR DOOR
1	L	TRIMS WITH LEDS	0	WITHOUT AIR FILTER	A	WITH REAR COOLING DOOR
2						
3						
4						
5	0	TRIMS WITHOUT LEDS	6 - 90 mm SKIRTING		C	WITH BLIND REAR DOOR
6			0	WITHOUT PLINTH		
			R	WITH PLINTH		

7 - COIL		8 - VALVE		9 - FLOWMETER		10 - PIPING EXTENSION KIT	
F	FREE COOLING COIL	2	2-WAY VALVE	0	WITHOUT FLOWMETER	0	WITHOUT PIPING EXTENSION KIT
S	STANDARD COIL	3	3-WAY VALVE	C	WITH FLOWMETER	S	UPPER PIPING KIT
						I	LOWER PIPING KIT
11 - HUMIDIFIER		12 - DROPLET SEPARATOR		13 - CONDENSATE PUMP			
0	WITHOUT HUMIDIFIER	0	WITHOUT DROPLET SEPARATOR	0	WITHOUT CONDENSATE PUMP		
A	HUMID. HDC+ CW-300 3 KG/H (1 PHASE)	S	WITH DROLET SEPARATOR	B	WITH CONDENSATE PUMP		
B	HUMID. HDC+ CW-300 3 KG/H (3 PHASE)						
C	HUMID. HDC+ CW-400 3 KG/H (1 PHASE)						
D	HUMID. HDC+ CW-400 3 KG/H (3PHASES)						

14. POWER SUPPLY		15. TOUCH SCREEN DISPLAY		16 - COMMUNICATION MODULE		17 - HUMIDITY SENSOR	
1	SINGLE-PHASE	0	WITHOUT TOUCH SCREEN DISPLAY	0	WITHOUT COMMUNICATION MODULE	0	WITHOUT HUMIDITY SENSOR
3	THREE-PHASE	P	WITH TOUCH SCREEN DISPLAY	E	WITH ETHERNET COMMUNICATION MODULE	S	WITH HUMIDITY SENSOR
				M	WITH MODBUS RTU COMMUNICATION MODULE		
18 - WATER LEAK DETECTOR							
0	WITHOUT WATER LEAK DETECTOR						
D	WITH WATER LEAK DETECTOR						

19 - HCD+ RACK			
0	WITHOUT KIT FOR 600 mm RACK	0	WITHOUT KIT FOR 800 mm RACK
1	WITH 1 KIT FOR ADAPTING TO 600 mm RACK	1	WITH 1 KIT FOR ADAPTING TO 800 mm RACK
2	WITH 2 KITS FOR ADAPTING TO 600 mm RACK	2	WITH 2 KITS FOR ADAPTING TO 800 mm RACK

* Example of encoding: HDC+CW -30042U1000FR-4LFAR-S2C000B-1PESD-00

HDC+ CW	-	300	42U	1000	FR	-	4	L	F	A	R	-	S	2	C	0	0	0	B	-	1	P	E	S	D	-	0	0
		1	2				3	4	5	6			7	8	9	10	11	12	13		14	15	16	17	18		19	

HDC+ Accessories



+ Fans modules

EC high-performance fans.

HDC+ 300: up to 7200 m3/h

HDC+ 400: up to 10350 m3/h

Maximum flow varies according to versions.

Disassembly without tools and with quick connectors, facilitating installation and maintenance.

Incorporating the latest technology to comply with European directive ErP2015, related to the KYOTO protocol on reduction of CO2 emissions. The fan blades have an improved curvature and are made of PP composite plastic reinforced with glass fibre, thus reducing air friction and noise as well as increasing the amount of air moved.

To this we can add the implementation of brushless EC technology motors, enabling a significant reduction in the power consumption of the motor. Fan speed is adjusted by continuously modulating the control signal following an adjusted curve, without steps, minimising fan consumption.

The modules can be ordered with or without the LED trim. The shutter modules are supplied without fans. They are used to cover the free spaces in the machine configuration with partial power, where all the fans are not installed.

+ HDC+ Frontal

HDC+300 MODULES WITH FANS



E.0022021 HDC+CW-300, AXIAL FAN MODULE WITH LEDS



E.0022048 HDC+CW-300, AXIAL FAN MODULE WITHOUT LEDS

HDC+300 MODULES WITHOUT FANS

Shutter modules (without fan) to cover holes in partial configurations.



E.0022023 HDC+CW-300, AXIAL BLIND FAN MODULE WITH LEDS

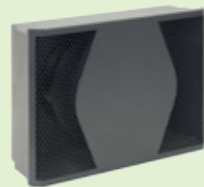


E.0022049 HDC+CW-300, AXIAL BLIND FAN MODULE WITHOUT LEDS

HDC+400 MODULES WITH FANS



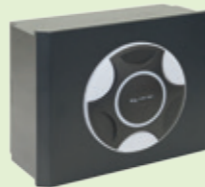
E.0022066 HDC+CW-400, AXIAL FAN MODULE WITH LEDS



E.0022093 HDC+CW-400, AXIAL FAN MODULE WITHOUT LEDS

HDC+400 MODULES WITHOUT FANS

Shutter modules (without fan) to cover holes in partial configurations.



E.0022068 HDC+CW-400, AXIAL BLIND FAN MODULE WITH LEDS



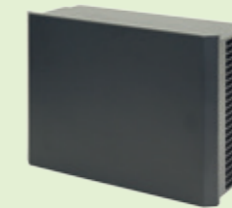
E.0022094 HDC+CW-400, AXIAL BLIND FAN MODULE WITHOUT LEDS

+ HDC+ Side / HDC+ RACK

HDC+300 / HDC+400 MODULES WITH FANS



E.0022022 HDC+CW-300, RADIAL FAN MODULE



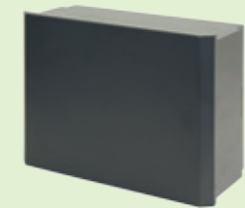
E.0022067 HDC+CW-400, RADIAL FAN MODULE

HDC+300 / HDC+400 MODULES WITHOUT FANS

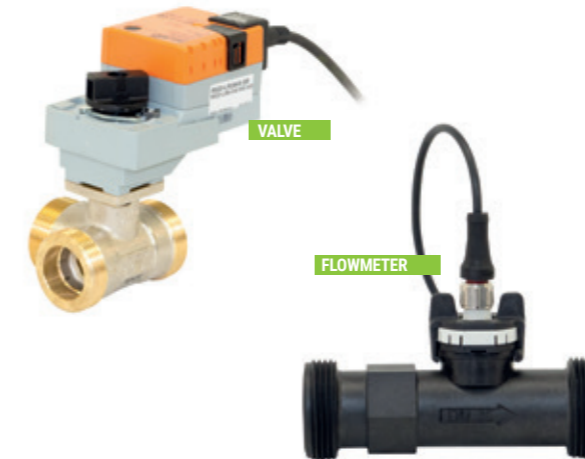
Shutter modules (without fan) to cover holes in partial configurations.



E.0022024 HDC+CW-300, RADIAL BLIND FAN MODULE



E.0022069 HDC+CW-400, RADIAL BLIND FAN MODULE



+ Flowmeter

Flowmeter for reading the water flow in the unit. Vortex type flowmeter, with no moving parts.

+ Valve

Ball valve, electronic modulating adjustment. 2 versions available. 2-way valve for variable flow systems, and 3-way valve for traditional fixed flow systems.

HDC+300

E.0022008 HDC+CW-300, CIRCUIT WITH 2-WAY VALVE

E.0022009 HDC+CW-300, CIRCUIT WITH 2-WAY VALVE + FLOWMETER

E.0022010 HDC+CW-300, CIRCUIT WITH 3-WAY VALVE

E.0022011 HDC+CW-300, CIRCUIT WITH 3-WAY VALVE + FLOWMETER

HDC+400

E.0022053 HDC+CW-400, CIRCUIT WITH 2-WAY VALVE

E.0022054 HDC+CW-400, CIRCUIT WITH 2-WAY VALVE + FLOWMETER

E.0022055 HDC+CW-400, CIRCUIT WITH 3-WAY VALVE

E.0022056 HDC+CW-400, CIRCUIT WITH 3-WAY VALVE + FLOWMETER

+ Condensate pump

Capacity: 8 l/h at 15 m (26 l/h at 0 m), guaranteeing correct evacuation of condensate water accumulated in the tray.

Alarm for maximum level of condensates in the tray, thanks to a built in level detector. Includes 14 mm diameter drain tube (9 mm internal), 5 m long.

E.0022132 HDC+CW- CONDENSATE PUMP



ACCESSORIES

ACCESSORIES



+ 4.3" graphic display

Touch screen display located on the front of the unit. Enables direct management of the HDC+ unit in the room.

If the unit has a communication module installed, the machine can be configured without the front display.

HDC+300

E.0022038 HDC+CW-300 FRONT WITH TOUCH SCREEN DISPLAY

E.0022039 HDC+CW-300 FRONT WITHOUT TOUCH SCREEN DISPLAY

HDC+400

E.0022083 HHDC+CW-400 FRONT WITH TOUCH SCREEN DISPLAY

E.0022084 HDC+CW-400 FRONT WITHOUT TOUCH SCREEN DISPLAY



+ Communication modules

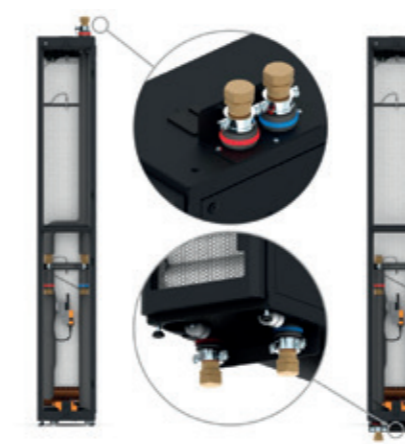
Communication cards enable the HDC+ unit to communicate with the building's BMS system or the DCIM system in the data centre. The machine can be optionally supplied for integration Ethernet or Modbus RTU protocols. The premium version comes with Ethernet from factory.

The Ethernet module incorporates a Website, HTML, SNMP, BacNet IP, Modbus IP, TRAP server and html page for website control of the unit.

E.0022127 HDC+CW, ETHERNET COMMUNICATION MODULE

E.0022128 HDC+CW, MODBUS RTU COMMUNICATION MODULE

+ For other communication protocols, please consult with the sales department.



+ Piping extension kit

The piping extension kit positions the main connectors of the unit's water circuit at the top of the machine or at the bottom, depending on the configuration.

Connected to the unit's inlet and outlet connections. This facilitates installation of the machine's hydraulic connections.

HDC+300

E.0022016 HDC+CW-300, UPPER PIPING EXTENSION KIT

E.0022017 HDC+CW-300, LOWER PIPING EXTENSION KIT

HDC+400

E.0022061 HDC+CW-400, UPPER PIPING EXTENSION KIT

E.0022062 HDC+CW-400, LOWER PIPING EXTENSION KIT



+ Air filters

G4 level, Zigzag type air filters. Easily cleanable and replaceable. Recommended for dirty or polluted environments (dust particles, etc.).

The filters are supplied with a galvanized metal casing.

HDC+300

E.0022045 HDC+CW-300, 2 G4 LEVEL AIR FILTER MODULE

E.0022046 HDC+CW-300, 2 G4 LEVEL SPARE AIR FILTER KIT

E.0022047 HDC+CW-300, 2 G4 LEVEL SPARE FILTER PAD KIT

HDC+400

E.0022090 HDC+CW-300, 2 G4 LEVEL AIR FILTER MODULE

E.0022091 HDC+CW-300, 2 G4 LEVEL SPARE AIR FILTER KIT

E.0022092 HDC+CW-300, 2 G4 LEVEL SPARE FILTER PAD KIT



+ Droplet separator

For very damp environments and when the operating conditions of the unit facilitate the condensation of water in the battery.

Guarantees that, at high air speeds, the droplets are collected by the separator and not expelled by the fans.

+ Note.

The cooling power will be affected. Please enquire.

HDC+300

E.0022013 HDC+CW-300, DROPLET SEPARATOR

HDC+400

E.0022058 HDC+CW-400, DROPLET SEPARATOR



+ Humidifier

Recommendable to provide humidity in especially dry environments, the HDC+ has submerged electrode humidifiers. Versions are available for units with three-phase power supply. The hydraulic connection of the humidifier should be made at the bottom of the unit.

HDC+300

E.0022014 HDC+CW-300, 3 kg/h HUMIDIFIER (SINGLE-PHASE)

E.0022015 HDC+CW-300, 3 kg/h HUMIDIFIER (THREE-PHASE)

HDC+400

E.0022059 HDC+CW-400, 3 kg/h HUMIDIFIER (SINGLE-PHASE)

E.0022060 HDC+CW-400, 3 kg/h HUMIDIFIER (THREE-PHASE)

ACCESSORIES



+ 90 mm skirting

Sheet steel skirting. Raising the unit 90 mm above the floor. With wheels and adjustable feet built into the skirting to allow convenient transport in the room.

HDC+300

E.0022044 HDC+CW-300, 90 mm SKIRTING, WHEELS AND FEET

HDC+400

E.0022089 HDC+CW-400, 90 mm SKIRTING, WHEELS AND FEET



+ Temperature sensor and Humidity probe

Temperature sensor type NTC 10 KΩ +1% at 25 °C Beta 3435, with air dissipation factor of 2.2 Mw. /°C. 6 m long cable.

Humidity sensor, type Hc105. Relative humidity reader 0...100% RH. Accuracy: +3% RH (10...90% RH), +5% RH (<10% RH and >90% RH)

E.0022130 HDC+CW, 6 m TEMPERATURE SENSOR

E.0022131 HDC+CW, HUMIDITY SENSOR



+ Water leak detector

One-time water leak detector. Installed at the lower part of the unit. Warns in case of any kind of water leak: Badly connected couplings, water leaks in pipes, etc.

Note:

Optionally, an extra continuous hose for detecting water leaks can be added. This can be installed on the floor of the room or inside the machine. (Please enquire with the sales department)

E.0022133 HDC+CW, ONE-TIME WATER LEAK DETECTOR

ACCESSORIES



+ Acoustic warning

Very bright warning light, 360° visibility and LED technology. It also has a buzzer producing 85 db at 3 m distance. The warning light is amber colour. Service life: 100,000 hours.

The kit includes a metal bracket to facilitate installation in the most appropriate place.

E.0022135 HDC+CW, ACOUSTIC ALARM



+ Portable maintenance console

Mainly used for maintenance work, facilitates the adjustment of the machine in the room. Useful when the unit is configured without a front touch screen.

E.0022136 HDC+CW, PORTABLE MAINTENANCE CONSOLE



+ Parallel connection to racks

In order to achieve a solid joint between the cooling units and the SAIFOR racks on the sides.

E.0022137 HDC+CW, PARALLEL CONNECTION KIT

HDC+ Technical specifications

+ HDC+CW-300

	FRONT VERSION		SIDE/RACK VERSION	
Power Supply (single-phase mod.)	2 x 230V/1~50/60Hz (L, N, PE)			
Power Supply (three-phase mod.)	400V/3~50/60Hz (L1, L2, L3, N, PE) o 230V/1~50/60Hz (L, N, PE)			
Max. power consumption.	4 Fans	2190 W		2020 W
	3 Fans	1655 W		1520 W
	2 Fans	1095 W		1035 W
	1 Fans	595 W		570 W
Type / Number of fans	EC / 4 maximum			
Max. Airflow	4 Fans	6200 m3/h		7050 m3/h
	3 Fans	5100 m3/h		5500 m3/h
	2 Fans	3650 m3/h		3800 m3/h
	1 Fans	1825 m3/h		1900 m3/h
Air filters	Filters with galvanized steel frame and G4 level synthetic fibre			
Max. Cooling power	4 Fans	45.5 kW		49.5 kW
	3 Fans	37.5 kW		38.5 kW
	2 Fans	26.5 kW		26.5 kW
	1 Fans	13 kW		13 kW
Coolant	Water/ Glycol mix (35% max.)			
Maximum water flow	70 l/min (1.17 l/s)			
Maximum water pressure	5 bar			
Temp. range water inlet	+7°C / +20°C			
Internal volume of water		8 l		8 l
Hydraulic connection	1 1/4" male connection			
Condensate pump	Water flow: 8 l/h (height 15 m) / 26 l/h (height 0 m) Hose supplied: 5 meters length, 6 mm interior diameter			
Environment temperature range	+10°C / +45°C			
Environment humidity range	Lower limit: 5.5 °C PR Upper limit: 60% HR / 15 °C PR			
Sound level (100%)		91 dB(A)		84 dB(A) Side / ND dB(A) Rack
Sound level (50%)		72 dB(A)		67 dB(A) Side / ND dB(A) Rack
Max. weight		190Kg		190Kg

Cooling capacity calculated with Delta T= 22°C/ Inlet Temp Water = 12°C.

The stated values are calculated with fans working at full speed (100%).

All values are accurate to +/- 5%.

The real values obtained during operation can vary depending on non-controlled parameters like humidity, barometric pressure, room and cubo isolation, etc.

The stated values are theoretical results based in extrapolated calculations from the tests done in TÜV SÜD laboratory in Munich.

+ HDC+CW-400

	FRONT VERSION		SIDE/RACK VERSION	
Power Supply (single-phase mod.)	2 x 230V/1~50/60Hz (L, N, PE)			
Power Supply (three-phase mod.)	400V/3~50/60Hz (L1, L2, L3, N, PE) o 230V/1~50/60Hz (L, N, PE)			
Max. power consumption	6 Fans	3255 W		3420 W
	5 Fans	2715 W		2850 W
	4 Fans	2165 W		2285 W
	3 Fans	1630 W		1710 W
	2 Fans	1100 W		1175 W
	1 Fans	600 W		675 W
Type / Number of fans	EC / 6 maximum			
Max. power consumption	6 Fans	9050 m3/h		10350 m3/h
	5 Fans	7925 m3/h		8850 m3/h
	4 Fans	6800 m3/h		7350 m3/h
	3 Fans	5275 m3/h		5600 m3/h
	2 Fans	3750 m3/h		3850 m3/h
	1 Fans	1875 m3/h		1925 m3/h
Air filters	Filters with galvanized steel frame and G4 level synthetic fibre			
Max. Cooling power	6 Fans	65.5 kW		71 kW
	5 Fans	57 kW		60.5 kW
	4 Fans	49 kW		50.5 kW
	3 Fans	38 kW		38.5 kW
	2 Fans	27 kW		26.5 kW
	1 Fans	13.5 kW		13 kW
Coolant	Water/ Glycol mix (35% max.)			
Maximum water flow	100 l/min (1.67 l/s)			
Maximum water pressure	5 bar			
Temp. range water inlet	+7°C / +20°C			
Internal volume of water		11 l		11 l
Hydraulic connection	1 1/4" male connection			
Condensate pump	Water flow: 8 l/h (height 15 m) / 26 l/h (height 0 m) Hose supplied: 5 metres length, 6 mm interior diameter			
Environment temperature range	+10°C / +45°C			
Environment humidity range	Lower limit: 5.5 °C PR Upper limit: 60% HR / 15 °C PR			
Sound level (100 %)		92 dB(A)		94 dB(A)
Sound level (50%)		74 dB(A)		72 dB(A)
Weight		240Kg		240Kg

Cooling capacity calculated with Delta T= 22°C/ Inlet Temp Water = 12°C.

The stated values are calculated with fans working at full speed (100%).

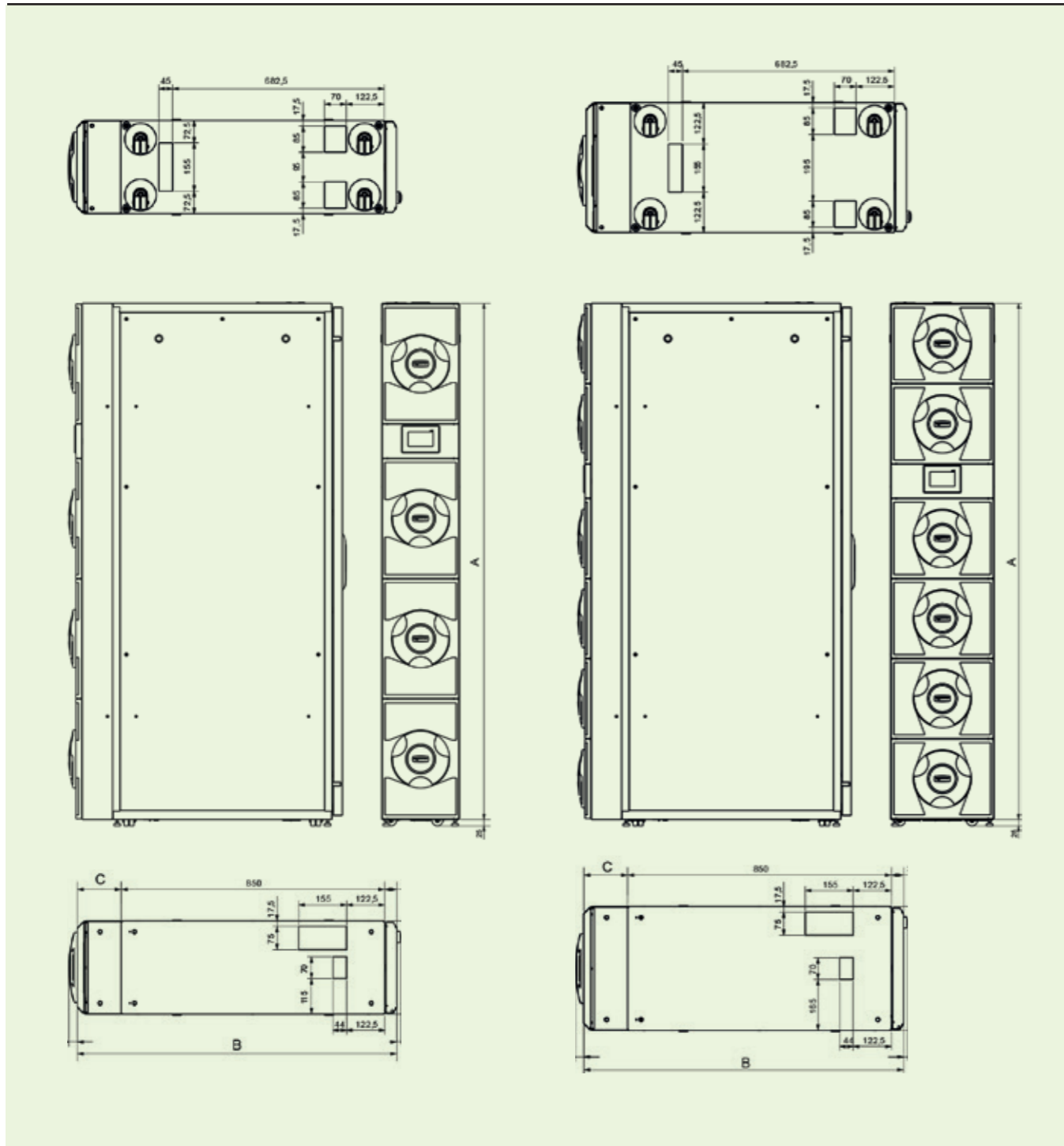
All values are accurate to +/- 5%.

The real values obtained during operation can vary depending on non-controlled parameters like humidity, barometric pressure, room and cubo isolation, etc.

The stated values are theoretical results based in extrapolated calculations from the tests done in TÜV SÜD laboratory in Munich.

+ DIMENSIONS

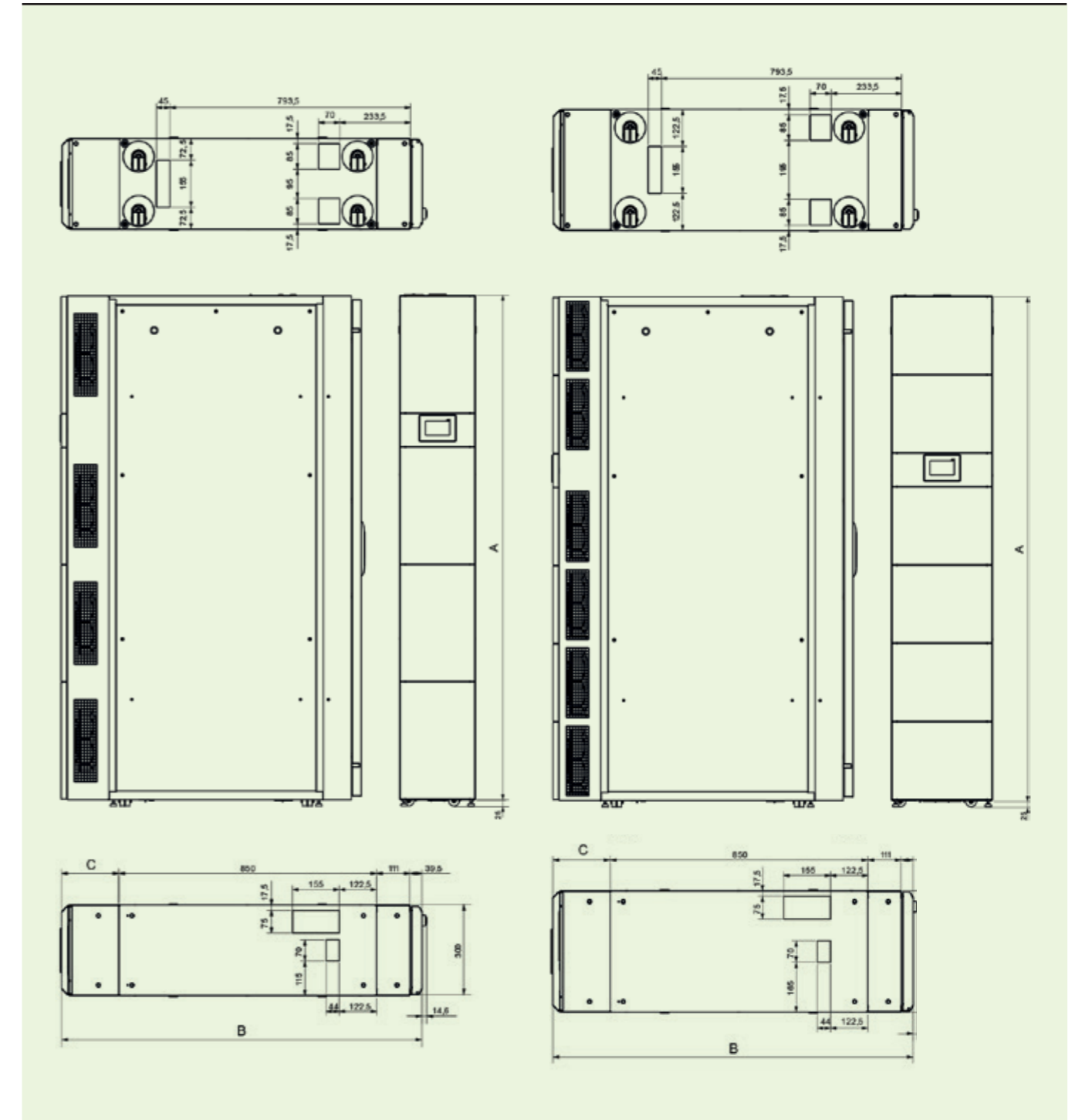
HDC+ Front



	A	B	C
42U X 1000	2000 mm	1031,5 mm	142 mm
42U X 1200	2000 mm	1231,5 mm	342 mm
47U X 1000	2200 mm	1031,5 mm	142 mm
47U X 1200	2200 mm	1231,5 mm	342 mm

+ DIMENSIONS

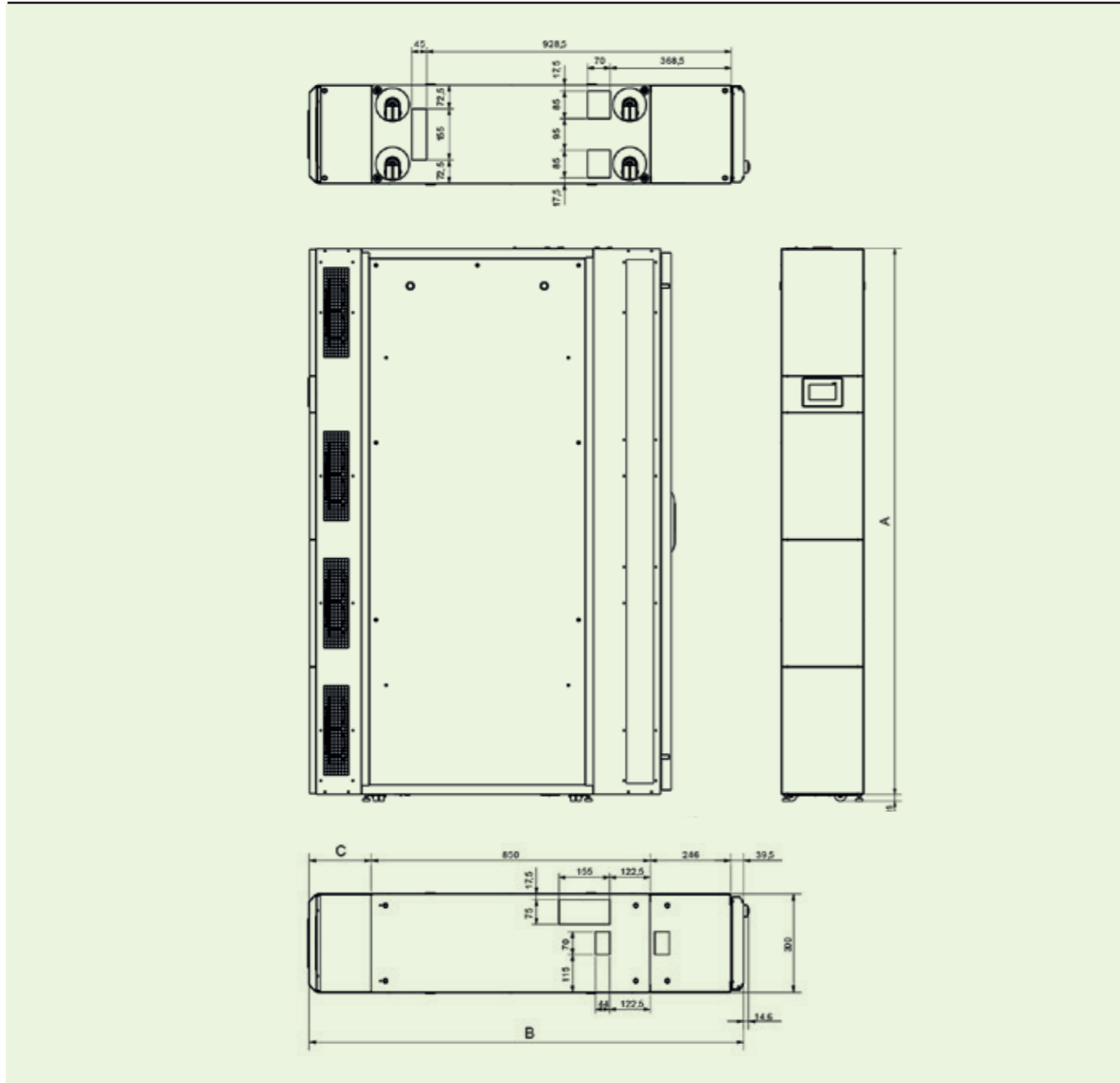
HDC+ Side



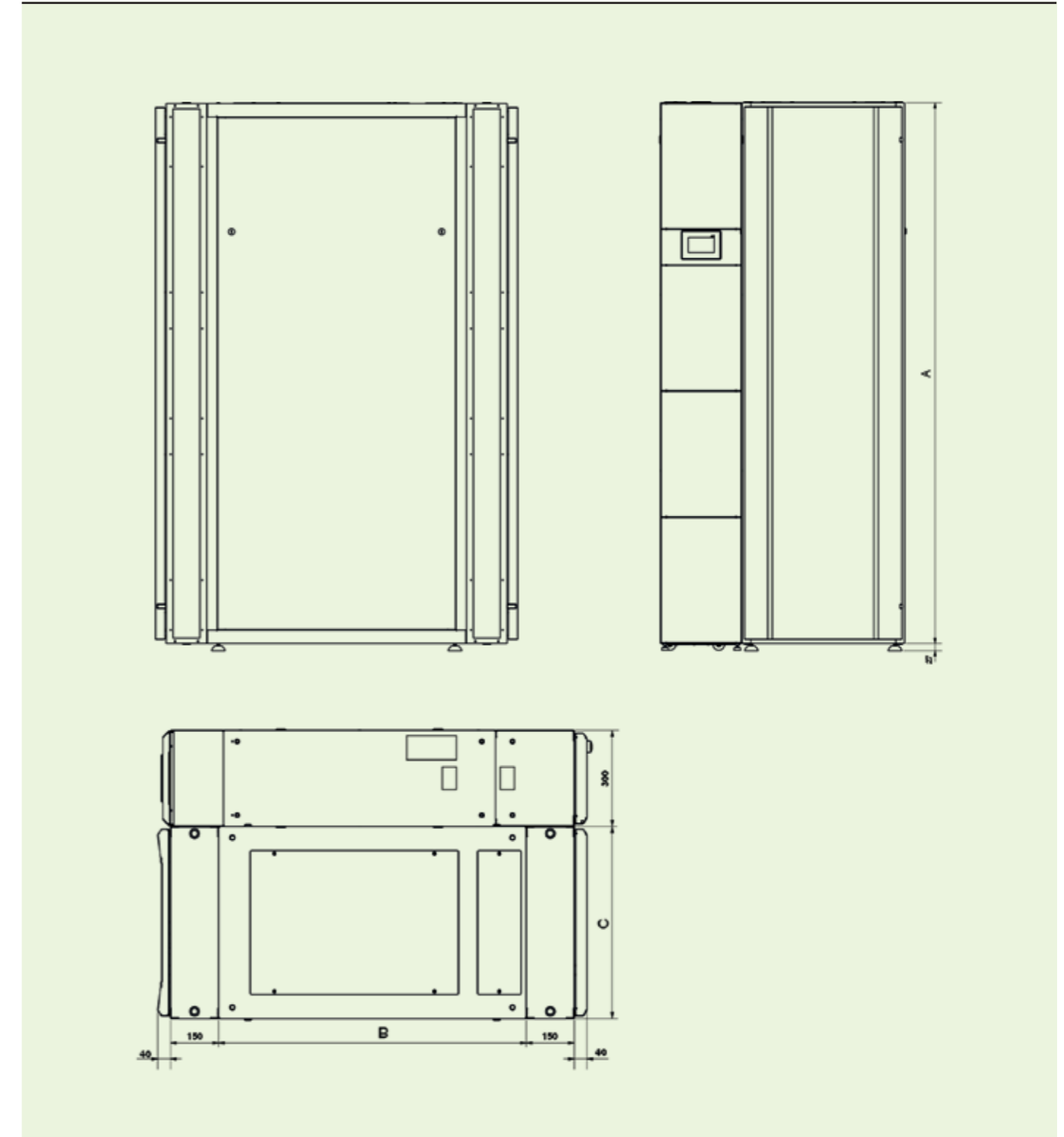
	A	B	C
42U X 1000	2000 mm	1190 mm	189,5 mm
42U X 1200	2000 mm	1390 mm	389,5 mm
47U X 1000	2200 mm	1190 mm	189,5 mm
47U X 1200	2200 mm	1390 mm	389,5 mm

+ DIMENSIONS

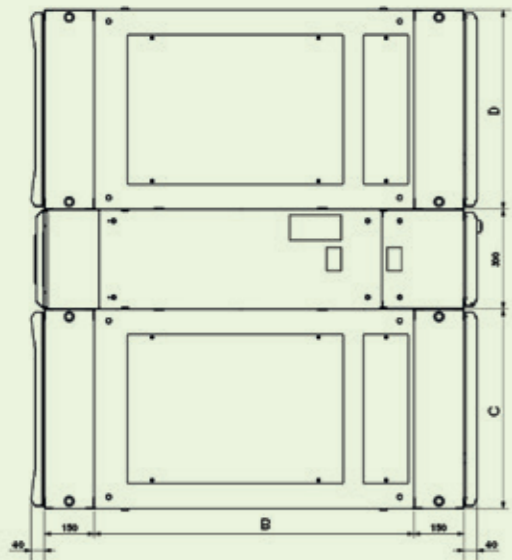
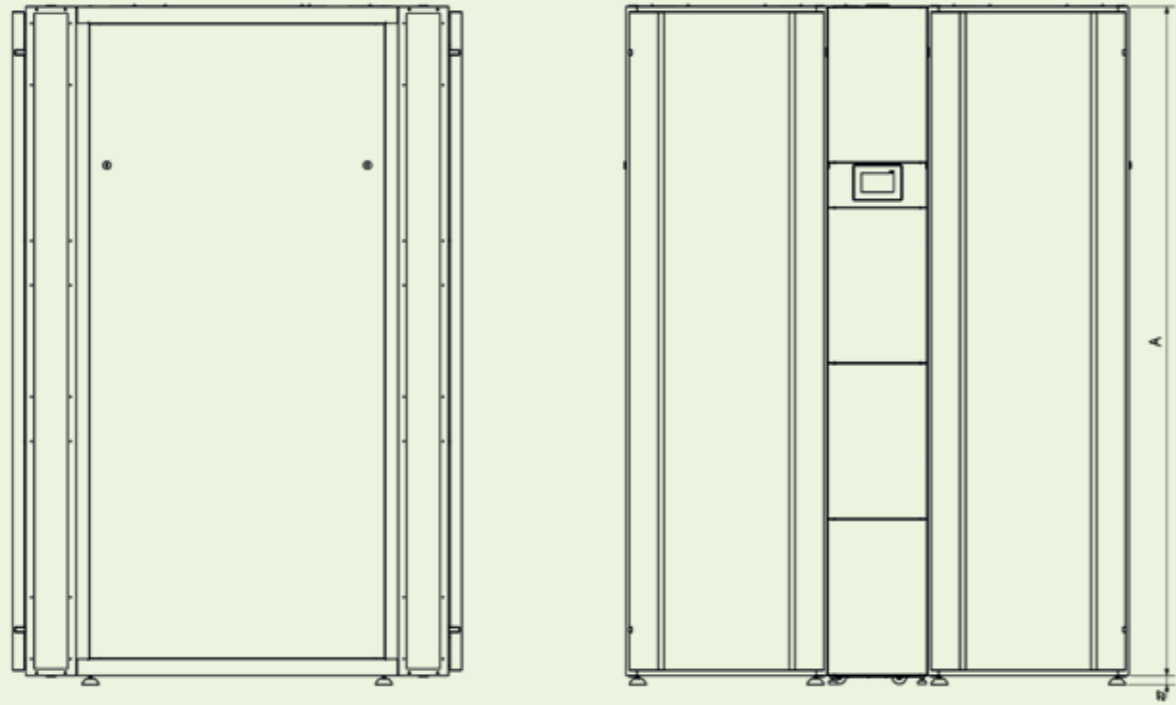
HDC+ Rack



	A	B	C
42U X 1000	2000 mm	1325 mm	189,5 mm
42U X 1200	2000 mm	1525 mm	389,5 mm
47U X 1000	2200 mm	1325 mm	189,5 mm
47U X 1200	2200 mm	1525 mm	389,5 mm



	A	B	Rack width (C)
42U X 1000	2000 mm	961 mm	600 mm
	2000 mm	961 mm	800 mm
42U X 1200	2000 mm	1161 mm	600 mm
	2000 mm	1161 mm	800 mm
47U X 1000	2200 mm	961 mm	600 mm
	2200 mm	961 mm	800 mm
47U X 1200	2200 mm	1161 mm	600 mm
	2200 mm	1161 mm	800 mm



	A	B	Rack1 width (C)	Rack2 width (D)
42U X 1000	2000 mm	961 mm	600 mm	600 mm
	2000 mm	961 mm	800 mm	800 mm
	2000 mm	961 mm	600 mm	800 mm
	2000 mm	961 mm	800 mm	600 mm
42U X 1200	2000 mm	1161 mm	600 mm	600 mm
	2000 mm	1161 mm	800 mm	800 mm
	2000 mm	1161 mm	600 mm	800 mm
	2000 mm	1161 mm	800 mm	600 mm
47U X 1000	2200 mm	961 mm	600 mm	600 mm
	2200 mm	961 mm	800 mm	800 mm
	2200 mm	961 mm	600 mm	800 mm
	2200 mm	961 mm	800 mm	600 mm
47U X 1200	2200 mm	1161 mm	600 mm	600 mm
	2200 mm	1161 mm	800 mm	800 mm
	2200 mm	1161 mm	600 mm	800 mm
	2200 mm	1161 mm	800 mm	600 mm

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