High efficiency room air conditioners

Uniflair™ air conditioners
Designed for precision environmental control of mission critical applications

schneider-electric.com

Life Is On Schneider Electric

Room air conditioners

Combining cutting-edge technology with energy efficiency and environmental sustainability is the basis of Schneider Electric™ room air conditioners, designed to offer a complete cooling solution for any IT environment. High energy efficiency, complete reliability, and total flexibility ensure total-cost-of-ownership reduction.

Schneider Electric offers a comprehensive portfolio of solutions for virtually any cooling need in critical IT environments, from network closets and server rooms to cloud and hyperscale data centers.

Flexibility

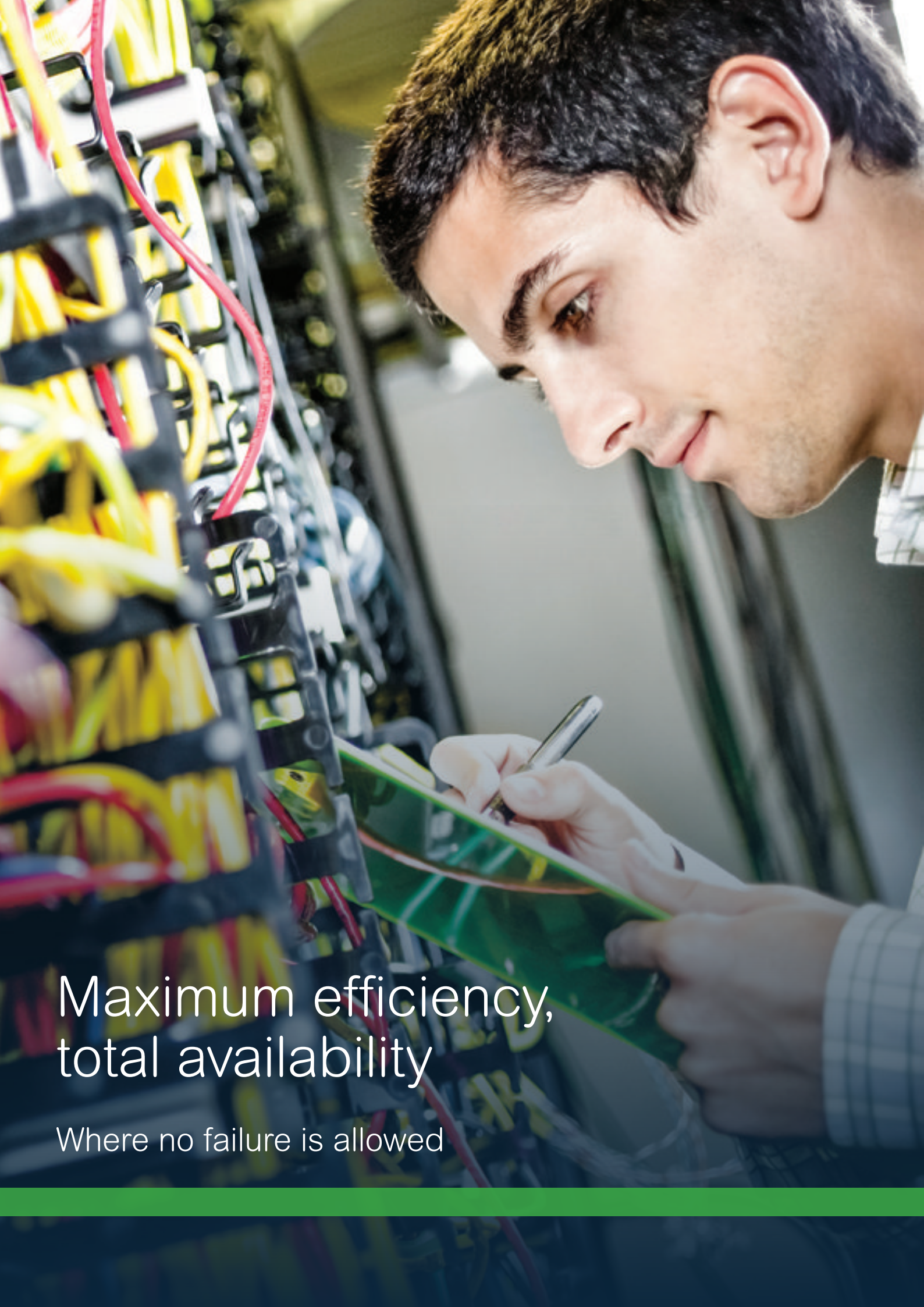
Modular and tailored solutions
for any application

Reliability

Continuous operation to safeguard
the customer’s business

Efficiency

Technological excellence for
energy saving performance



Maximum efficiency, total availability

Where no failure is allowed

Data center needs

Efficiency and sustainability

A data center represents one of the highest energy-consuming elements within the electrical chain. Therefore, the objective is to optimize the operation of this infrastructure, reduce energy consumption, maximize efficiency, and minimize CO_2 emissions.

For the cooling system to provide increased flexibility and significant improvement in energy consumption metrics (e.g., PUE), it is important that the structure presents a significant level of efficiency not only at nominal loads, but also at partial loads.

Indirect free cooling solutions should be proposed whenever possible, as well as optimization of systems according to the heat load in the room.

Modularity and flexibility

New server technology has introduced an increased level of modularity in infrastructure growth, adapting to the needs of the client and facilitating upgrades that are difficult to predict long term.

Cooling solutions must allow for modular planning and integration, and adapt automatically to the new load conditions of the room.

A simple infrastructure creates a significant advantage in terms of management costs. This can be achieved by using cooling systems that can be implemented over time. Another important element that influences operating costs and system reliability is system maintenance. A structure that allows simple maintenance is based on consolidated, tested, and reliable systems, and represents an indisputable advantage of simplified system management.

Infrastructure management

Data centers are complex environments; providing complete systems composed of integrated elements guarantees compatibility, a single source of responsibility, and strategic integration of a regulated system.

This is a departure from the traditional logic of single elements, and a move toward the optimization of all operating parameters (energy and operational) through integrated logics (internal units, distribution systems, and external units). The cooling system must then be able to communicate with the various building management systems.

Reliability

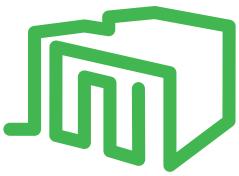
A fundamental requirement for each data center is to guarantee continuous operation and total reliability. This is achieved thanks to the design and implementation of cooling systems that are intrinsically reliable and incorporate an appropriate level of redundancy. System reliability is based on several basic considerations such as dual sources of cooling and electrical power.

Cost of ownership

Reduced management and operating costs are competitive advantages in the data center market. The cooling system accounts for about 40% of total on-site energy consumption. In addition to reducing energy consumption, it is also important to reduce the costs of maintenance and reconfiguration due to inevitable changes in IT systems.

To make data centers cost efficient, it is necessary to reduce the initial system investment, and to establish an infrastructure that can grow over time as needs change.

An increase in the effectiveness of a cooling system allows auxiliary systems to be precisely sized without extra cost due to the excess power installed. Such CapEx optimization can be achieved by using a cooling system that is simply implemented and can be adapted to changing site requirements.



Today's challenge is keeping up with growing heat densities while reducing operating costs.

Schneider Electric room air conditioners rise to this challenge because energy efficiency, availability, and flexibility are the priorities.

Our wide range of products allows us to meet the cooling requirements of data centers of every size, from small (below 200 kW) to large (1 MW+), and to apply the right technology according to the IT equipment and environmenal infrastructure.

30%*

Annual energy consumption is reduced by 30% thanks to innovative components like EC fans, tandem compressors, EEV valves, R-410A refrigerant, and AFPS systems.

*Average value in a medium-sized data center in Europe

99.99%

Tier III and Tier IV data centers are 99.99% reliable according to Uptime Institute certification standards.
– Uniflair CRACs are ready

Uniflair

Perimeter cooling for any data center environment, with a low cost of ownership

Uniflair LE are leading-edge precision cooling solutions specifically designed to maintain temperature and humidity within tight tolerances.

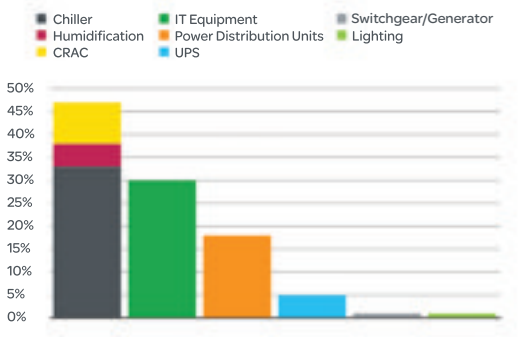
Perfect for racked and nonracked IT loads, these solutions meet the diverse requirements of any data center environment. These intelligent units monitor the status of components and environmental parameters to ensure correct functionality during all modes of operation. When combined with hot-or-cold-aisle containment solutions, Uniflair room cooling units can further improve efficiency and achieve higher densities.

Uniflair benefits

High energy efficiency

Minimizing operating costs in high-tech installations is becoming more essential than ever in the competitive marketplace, and emphasis on environmental sustainability is increasing. This means that high energy efficiency is now a key factor in precision air conditioning — a major focus in the design of Schneider Electric units.

Low energy consumption is the result of an exhaustive analysis, from the choice of components to the constant refinement of design solutions.



Versatile configurations

A wide range of configurations has been developed to give building services engineers maximum design freedom without the need for expensive solutions. Versatility is at the heart of Schneider Electric units, including:

- Different fan configurations to cover a wide range of requirements
- A range of filter types and grades
- Different acoustic unit casing panel linings
- Adaptability to a variety of plant configurations
- Versions available with one or two independent refrigerant circuits
- Minimal footprint with frontal access for all maintenance
- Minimal service clearance
- Adaptability to a wide range of supervision and network languages and protocols
- Simple on-site implementation of a variety of configurations

SHR (sensible heat ratio) close to 1

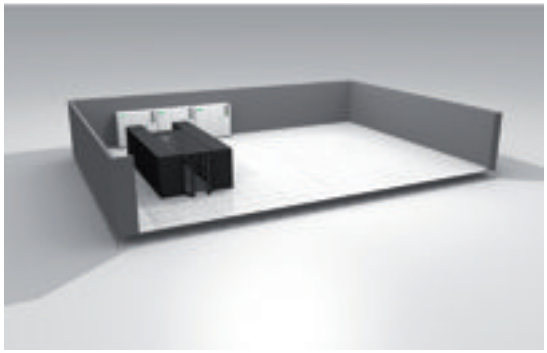
The primary objective of precision air conditioning must be to dissipate the real heat load in the space.

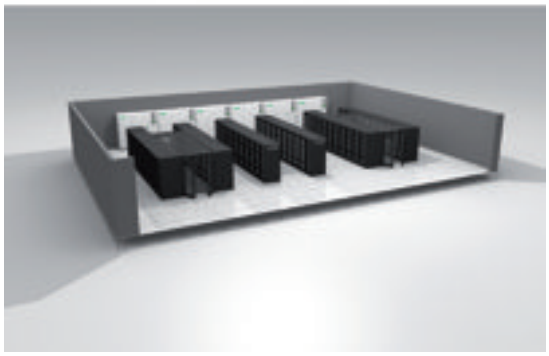
All heat produced by electronic equipment is sensible heat, and the unwanted latent cooling (dehumidification) is actually a waste of energy as it provides no benefit to the equipment being cooled. In fact, it can actually create the need to expend more energy putting humidity back into the space.

For this reason Schneider Electric units have been designed to provide a very high ratio of sensible to total cooling (sensible heat ratio).

Net sensible cooling capacity

To achieve operational efficiency, Schneider Electric cooling solutions are designed with net sensible capacity — sensible cooling minus fan motor heat gains — in mind.





Compact dimensions and simple handling/installation

Uniflair units are designed with special attention to equipment dimensions and to the logistics of handling, installation, and accessibility. Given the high cost of space in high-tech environments, it is vital not only that precision air conditioning has the smallest possible footprint, but also that there is full frontal component access to enable units to be installed next to each other or next to other equipment. Uniflair units represent the industry benchmark — particularly compact, low weight, quick and simple to install, and easy to maneuver, even in confined spaces.

Maintenance

The ease of maintaining Uniflair units is a fundamental factor in reducing operating costs and avoiding down time. The front panels can be opened without the need for special tools and all normal maintenance operations can be carried out from the front of the unit. A pushbutton catch ensures easy access to the controls compartment, while the cover of the electrical panel inside is fitted with a safety interlocked mains isolator that is compliant with safety regulations. Unit maintenance can also be carried out while in operation and without disrupting the airflow.

Reliability

Units ensure reliability through:

- Monitoring all components
- Precise and clear display of any malfunctions or abnormal operating conditions, including a record of prior events
- Management of emergency conditions with ability to deactivate the operation of heaters and humidifiers in predetermined emergency situations while still maintaining basic cooling needs

Flexibility

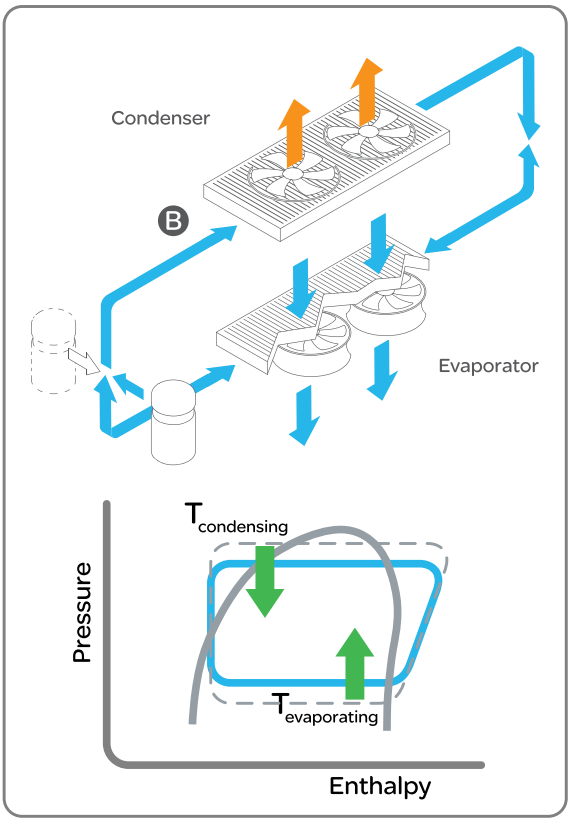
The control software enables the operation of the unit to be adapted to every type of installation thanks to:

- The ability to input a double set-point for both temperature and humidity
- The ability to change fan speed directly from the user terminal (for units with EC fans)
- Flexible configurability of alarm outputs
- The ability to calibrate temperature and humidity sensors
- The ability to interface with a wide range of BMS systems

Uniflair benefits

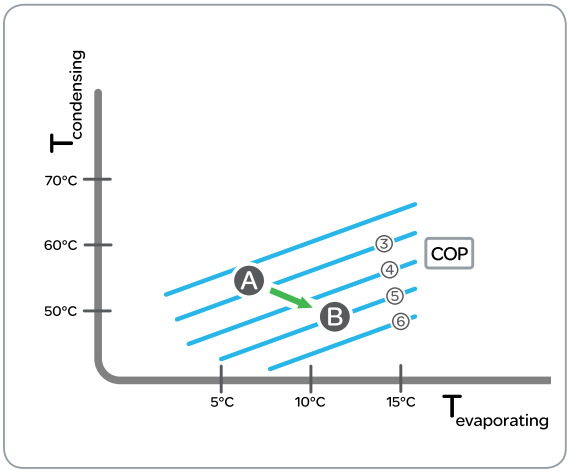
Tandem

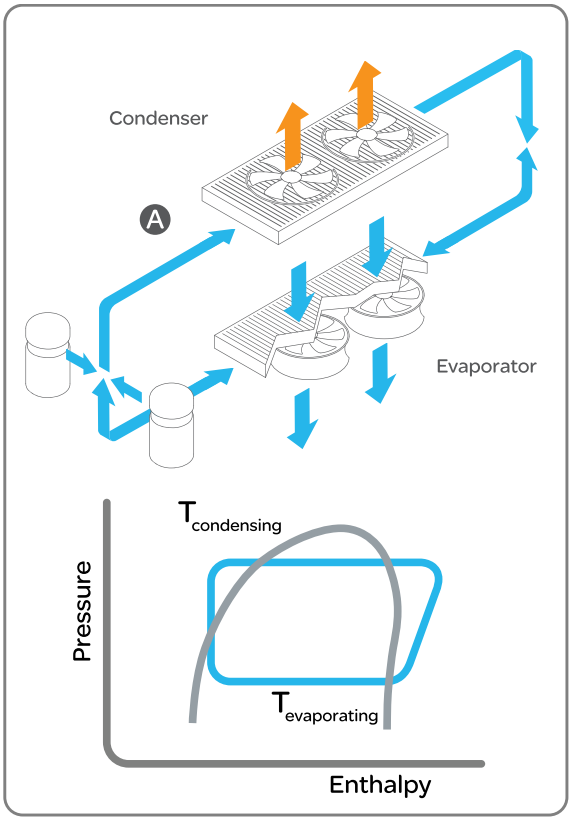
In many applications, the room load can vary enormously during the course of a single day or from season to season. This will cause wide variations in the amount of cooling required at any given moment. In these circumstances, it is very important to use precision air conditioning units that are highly energy efficient at part-load. Uniflair LE models (with suffix **21 or **42) are specifically designed with part-load environments in mind; fitted with two compressors operating in parallel on the same circuit, these models offer two stages of cooling on a single circuit of refrigeration. As the evaporator coil surface area (designed for the capacity of two compressors) is fixed, one single compressor in operation (fig. B) benefits from the availability of a 'double sized' evaporator coil. This maximization of the cooling effect leads to increases in part-load efficiencies and a rise in the part-load coefficient of performance (COP). To compare part-load efficiencies of different units, a number of parameters have been developed that take into account the COP at 25, 50, 75, and 100 percent load and calculate a weighted mean. These parameters (IPLV: integrated partial load value, and SEER: seasonal energy efficiency ratio) differ in their weightings and the operating conditions at which the different COPs are calculated, but they all follow the same formula.



A.100% Operation

$$\frac{(W_{100\%} \times COP_{100\%}) + (W_{75\%} \times COP_{75\%}) + (W_{50\%} \times COP_{50\%}) + (W_{25\%} \times COP_{25\%})}{100}$$





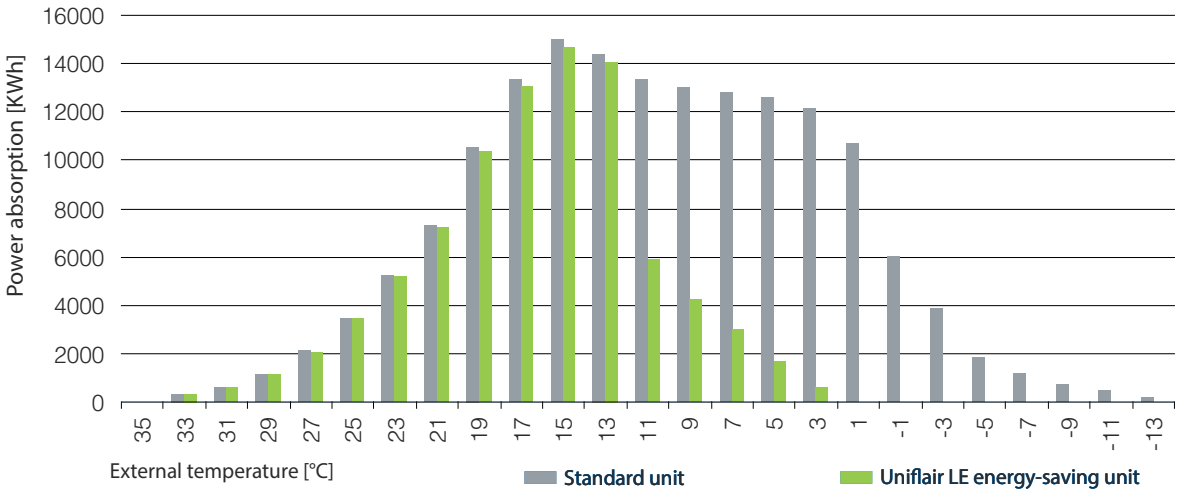
B. Part-load Operation

Energy-saving units (free-cooling)

Energy consumption continues to be a major factor in the operating costs of modern systems. Ensuring maximum reliability in operation at the same time as reducing energy consumption to the minimum is the result of technical product choices.

The energy-saving models have been designed to apply this concept. The operating principle is based on the ability to provide free-cooling for a space when the outdoor temperature is below that of the space itself; the lower the outdoor temperature, the greater the energy savings.

Free-cooling is provided without the need to operate compressors and does not depend on pulling outside air into the space (indirect free-cooling). This provides stable humidity and air quality in the space.



Comparison of annual power consumption between a standard unit and a unit without a free-cooling system (Space conditions 24 °C, 50% RH at constant load, TDER1822A + 2 x RAL3600 - Frankfurt).

Total control

Uniflair LE units are equipped with sophisticated controls and management software developed, implemented, and tested by Schneider Electric. Every control solution is designed to maximize the performance and reliability of the unit. Every component is monitored in real time, its performance optimized and kept within design parameters. As sophisticated as the control algorithms may be, the interface is user friendly and intuitive with an easy-to-read backlit display. The result is a control system that is reliable, flexible, and high performing.

Uniflair benefits

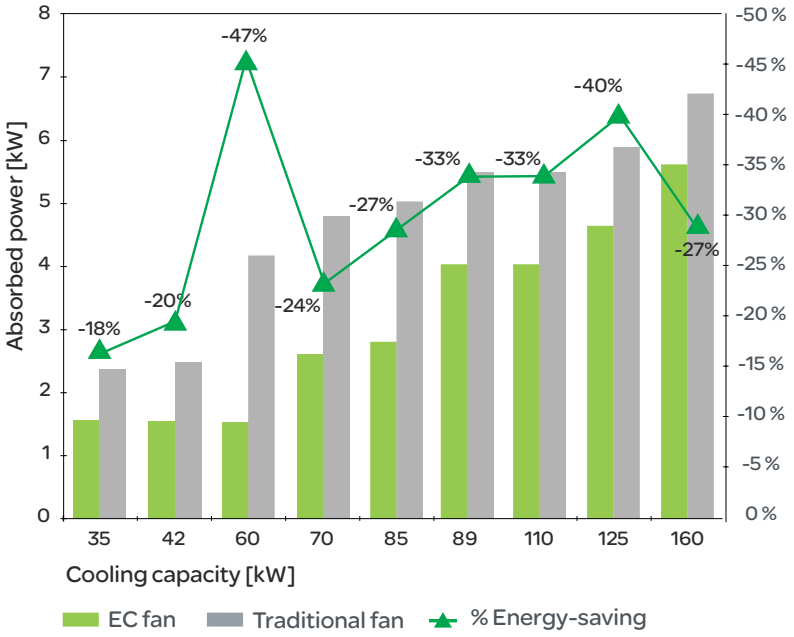
EC fans

Every component of Uniflair LE ranges has been chosen in accordance with the design criteria of energy saving for maximum efficiency, such as the selection of electronically commutated (EC) direct current motors. This new type of fan-motor combination offers a number of advantages over traditional types:

- Lower power consumption on the fan side
- High part-load efficiency
- Fan speed adjustment via the microprocessor control while the unit is running
- Ability to regulate airflow depending on the actual thermal load

R-410A

R-410A is similar to a mono-component refrigerant (which is near azeotropic), as it is characterized by the absence of glide during the change of state, which occurs at a constant temperature without energy losses. Thanks to a greater heat exchange capacity and a notable decrease in pressure drops, it is possible to maximize the size of the exchangers while increasing efficiency. Moreover, performance is not affected by separation of the gas components over time. In fact, any refrigerant leaks and subsequent integrations do not affect performance and can be managed quickly and effectively without replacing the whole refrigerant charge and without changing the initial composition.



Comparison of power consumption between a unit fitted with EC fans and one with traditional fans (space conditions 24 °C, 50% RH at constant load, series TDCR and TDCV)

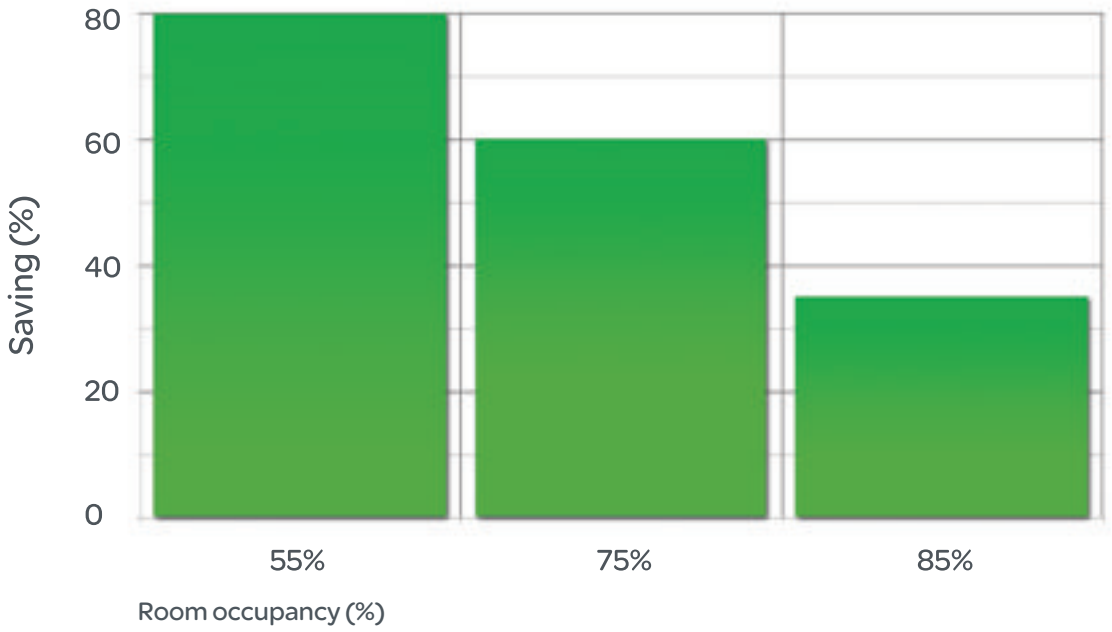
Automatic Floor Pressurization System

Maintaining correct pressurization of the floor space is a key factor to ensure that the cooling system operates with maximum efficiency and that cool air is available where needed. This process must be guaranteed for the entire lifetime of a server room that may be upgraded and changed over time.

The Automatic Floor Pressurization System (AFPS), developed and tested by Schneider Electric, enables structural flexibility through automatic adjustment of the airflow according to the servers that have been installed. AFPS automatically adjusts the airflow of the perimeter units that are fitted with EC fans during standard and emergency maintenance, maintaining a constant pressure under the raised floor and avoiding the creation of hot spots.

Electronic expansion valves

Electronic expansion valves (EEVs) are integrated with the microprocessor range in all Uniflair models. This innovation provides highly efficient electronic control of the flow of refrigerant that is unmatched by any traditional mechanical expansion valve. Under the control of the Schneider Electric Control System, the EEV provides accurate control of the refrigerant superheat to ensure an increase in the COP at low external temperatures; it enables the unit to operate at much lower condensing pressures than would be possible with a traditional mechanical valve. The dehumidification function is also controlled through the operation of the EEV. In this way, dehumidification is achieved without a reduction in the airflow rate, ensuring continuous and uniform air distribution in the space and avoiding any sudden variations in discharge air temperature.



% savings with AFPS

Uniflair LE configurations

Upflow units

Upflow units (with air discharge from the top) are designed to distribute the conditioned air by means of a plenum, through a system of ducts, or via a suspended ceiling. Air intake is normally through the front of the unit, but versions are also available with air return through the rear or bottom of the unit.

Downflow units

Downflow units are designed to distribute the conditioned air by means of a raised floor, through a system of ducts, or via a discharge plenum underneath the unit.

Air-cooled direct expansion units

Air-cooled direct expansion units extract heat from the room and transfer it to the outside air using air-cooled refrigerant heat exchangers (condensers). Once installed, the room unit and external condenser form an autonomous sealed circuit.

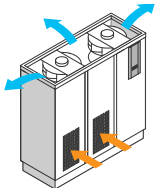
The remote condensers used with DX units include precise electronic fan-speed condensing pressure control to ensure trouble-free operation of the unit throughout the year under a very wide range of external air temperatures. Special attention has been paid to the acoustic design of the condensers to minimize noise levels. A wide range of combinations is available to meet different site requirements.

Water-cooled direct expansion units

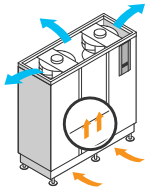
In water-cooled units, the heat extracted from the room is transferred to water via stainless steel brazed-plate heat exchangers within the unit.

The cooling water may be fed from a cooling tower or circulated in a closed loop cooled by external dry-coolers. In the latter case, an antifreeze mixture of water and glycol is normally used.

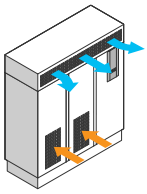
Water-cooled units have the advantage that the refrigerant circuits are precharged and sealed in the factory. This makes system installation extremely simple, eliminating the need for any site-installed refrigerant pipework.



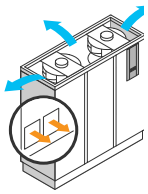
Upflow unit with suction from the front.



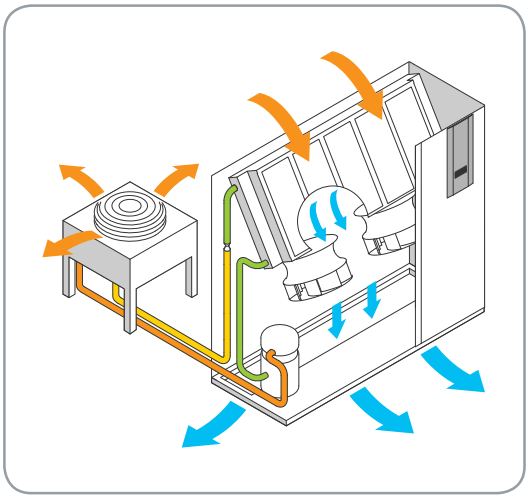
Upflow unit with suction from the base.

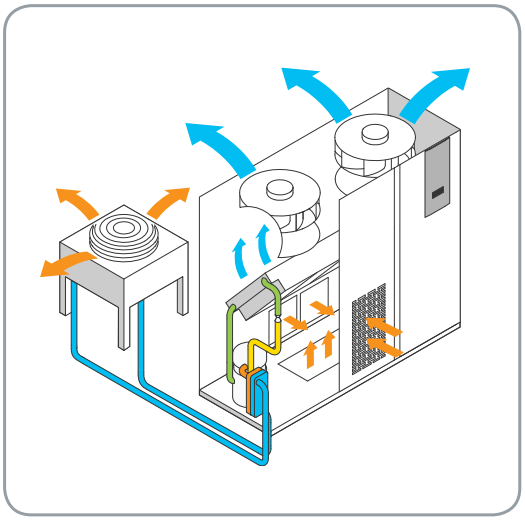


Upflow unit with front discharge plenum and suction from the front.



Upflow unit with suction from the rear.





Note: These configurations are shown only as examples.

Energy-saving units

Energy-saving units are the ultimate energy-efficient solution in cool or temperate climates. The operating principle exploits the free-cooling affect available when the outside air temperature is lower than that in the conditioned space — the lower the outside temperature, the greater the energy saving. The sophisticated microprocessor control manages operation of the unit automatically in three different situations.

In summer, the unit operates as a normal closed-circuit glycol-cooled system (Fig. A). As the external temperature falls, the coolant can be used directly for the free-cooling of the air. In this case the coolant is circulated in the coil inside the unit (Fig. B) and both the refrigerant circuit and the glycol circuit contribute to cooling, reducing the energy used by the compressor. If the outside temperature falls further to a level at which the coolant can dissipate the entire heat load from the room, the refrigerant circuit is shut down completely and the unit functions as a traditional CW unit with a modulating valve (Fig. C). With this technology, energy-saving units provide significant reductions in operating costs and payback periods.

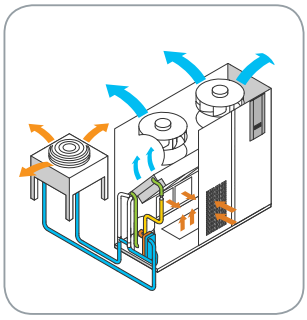


Fig. A: Mechanical cooling operation

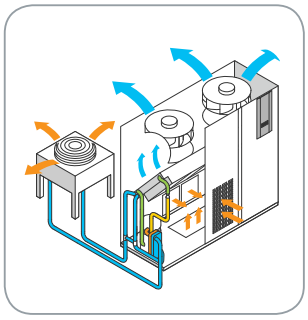


Fig. B: Mixed cooling operation

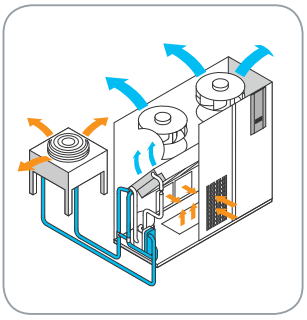
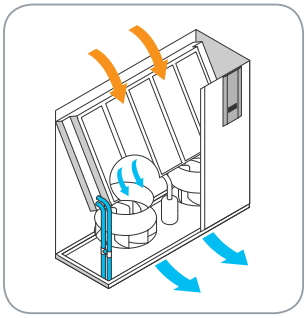
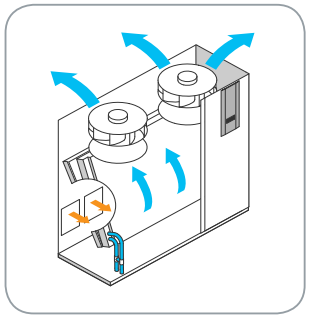


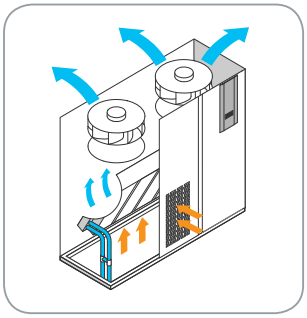
Fig. C: Free-cooling operation

Chilled Water units

These units use available chilled water (CW) to control room conditions. CW units have a relatively simple construction and provide outstanding reliability. The microprocessor controls the modulating action of the 3-way (or optional 2-way) CW valve to give accurate capacity control. Careful sizing of the heat exchanger coils yields a high sensible-to-total cooling ratio under most operating conditions at the appropriate CW temperatures.

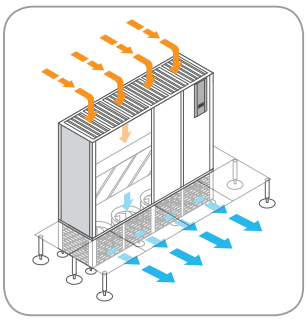






Chilled Water units with underfloor fans

CW units with fans located underneath the floor allow for more coil area in the unit and less internal air-side pressure drop. The fan module beneath the unit can be configured in many different airflow patterns, as well as be placed beneath or above the raised floor for total flexibility. More heat exchanger coil and less pressure drop equals less power consumption and more capacity inside a compact footprint.



Direct-expansion air-cooled units with backward-curved fans equipped with EC motor

Uniflair LE

TDAV – TUAV

Range

Cooling capacity: 20 ÷ 100 kW

Refrigerant R-410A

EC fans

Available versions:

- Downflow (TDAV)
- Upflow (TUAV)

Standard features

- Advanced microprocessor control system is available with local or remote user terminal
- Units are equipped with EC fans for maximum efficiency
- Unit structure is characterized by a self-supporting frame in galvanized steel with panels; external panels are coated with RAL9003 epoxy-polyester paint and internally lined with heat and sound-proofing insulation
- Electronic expansion valve is controlled by the microprocessor and a dedicated software that increases the cooling precision and the energy efficiency of the cooling cycle
- The cooling coil is designed for an elevated SHR and reduced pressure drops in the air section, and is made from copper tubes mechanically expanded on aluminum fins, complete with a hydrophilic treatment
- Uniflair LE units are ETL and cETL listed and meet U.S. Department of Energy (DOE) efficiency standards
- High-efficiency, MERV8-pleated air filters are housed in a metal frame and equipped with a dirty filter differential pressure switch and low airflow differential pressure switch
- The Uniflair LE range offers the possibility to select units equipped with two compressors (tandem) for each circuit, granting better efficiency and regulation capacity at partial loads (models with the **21 or **42 suffix)
- Total front access is available for unit maintenance
- The electrical panel is situated in a compartment separated from the airflow and complies with the 2006/95/EC directive and related standards
- Microprocessor control system includes:
  - Integrated management of the EEV and refrigerating circuit parameters
  - Local user terminal with external accessibility
  - Integrated LAN card for local network connection of a group of CRACs
  - Rotation and active stand-by management
  - Free contact for general and two for addressable alarms
  - Remote on/off switch
  - Ability to interface with modbus protocol directly on RS485 serial card
  - Ability to interface with main external communication protocols: BACnet, Lonworks, Trend, Metasys, TCP/IP, SNMP, and EcoStruxure platform

Technical data

TDAV-TUAV model		0511	1121	1822	2242	2542
Power supply	V/Ph/Hz	230/3/60, 460/3/60, 575/3/60				
Fans		1	2	2	3	3
Airflow	CFM	3500	7100	9300	12600	12600
Number of compressors		1	2	2	4	4
Number of circuits		1	1	2	2	2
Net total cooling capacity	Btu/Hr	54000	109000	153000	217000	220000
Net sensible cooling capacity	Btu/Hr	54000	109000	153000	217000	220000
Dimensions						
Height	in	77.1	77.1	77.1	77.1/85.6*	77.1/85.6*
Length	in	39.7	67.7	85	101.5	101.5
Depth	in	29.5	34	34	34	34

Note: Rating conditions are 75 °F (24 °C), 45% RH
*Downflow models

Construction options

- Immersed electrode humidifier
- Low surface temperature electrical heaters with extended fans, complete with double safety thermostat and manual resetting

Accessories

The units can be supplied with the following external accessories:

- Remote, semi-graphic user terminal
- RS485 serial adaptor to communicate with external BMS
- LON FTT10 serial adaptor to communicate with external BMS managed with LON protocol
- TCP/IP serial adaptor to communicate with external BMS managed with SNMP protocol
- Motorized damper
- Condensate drain pump
- Top return or front discharge plenums
- Adjustable floor stands
- Remote air cooled condensers and low ambient controls

Direct-expansion water-cooled units with backward-curved fans equipped with EC motor

Uniflair LE

TDWV – TUWV

Range

Cooling capacity: 20 ÷ 100 kW

Refrigerant R-410A

EC fans

Available versions:

- Downflow (TDWV)
- Upflow (TUWV)

Standard features

- Advanced microprocessor control system with a local or remote user terminal
- The units are equipped with EC fans for efficiency maximization
- The structure of the unit is characterized by a self-supporting frame in galvanized steel with panels; external panels are coated with RAL9003 epoxy-polyester paint and internally lined with heat and sound-proofing insulation
- Electronic expansion valve is controlled by the microprocessor and a dedicated software that increases the precision of the cooling and the energy efficiency of the cooling cycle
- The cooling coil is designed for an elevated SHR and reduced pressure drops in the air section, and is made from copper tubes mechanically expanded on aluminum fins, complete with a hydrophilic treatment
- Internal water-cooled condenser braze is welded and made of AISI 304 stainless steel
- Uniflair LE units are ETL and cETL listed and meet U.S. Department of Energy (DOE) efficiency standards
- High-efficiency, MERV8-pleated air filters are housed in a metal frame and equipped with a dirty filter differential pressure switch and low airflow differential pressure switch
- The Uniflair LE range offers the possibility to select units equipped with two compressors (tandem) for each circuit, which grants better efficiency and regulation capacity at partial loads (models with the **21 or **42 suffix)
- Total front access is available for unit maintenance
- The electrical panel is situated in a compartment separated from the airflow and complies with the 2006/95/EC directive and related standards
- Microprocessor control system includes:
  - Integrated management of the EEV and refrigerating circuit parameters
  - Local user terminal with external accessibility
  - Integrated LAN card for local network connection of a group of CRACs
  - Rotation and active stand-by management
  - Free contact for general and two for addressable alarms
  - Remote on/off switch
  - Ability to interface with modbus protocol directly on RS485 serial card
  - Ability to interface with main external communication protocols: BACnet, Lonworks, Trend, Metasys, TCP/IP, SNMP, and EcoStruxure platform

Technical data

TDWV-TUWV model		0511	1121	1822	2242	2542	2842
Power supply	V/Ph/Hz	230/3/60, 460/3/60, 575/3/60					
Fans		1	2	2	3	3	3
Airflow	CFM	3500	7100	9300	12600	12600	12600
Number of compressors		1	2	2	4	4	4
Number of circuits		1	1	2	2	2	2
Net total cooling capacity	Btu/Hr	55000	117000	156000	229000	235000	254000
Net sensible cooling capacity	Btu/Hr	55000	117000	156000	210000	235000	254000
Dimensions							
Height	in	77.1	77.1	77.1	77.1/85.6*	77.1/85.6*	77.1/85.6*
Length	in	39.7	67.7	85	101.5	101.5	101.5
Depth	in	29.5	34	34	34	34	34

Note: Rating conditions are 75 °F (24 °C), 45% RH
*Downflow models

Construction options

- Immersed electrode humidifier
- Low surface temperature electrical heaters with extended fans, complete with double safety thermostat and manual resetting
- Head pressure control on refrigerant side with constant water flow, or water side with optional 2- or 3-way modulating valves

Accessories

The units can be supplied with the following external accessories:

- Remote, semi-graphic user terminal
- RS485 serial adaptor to communicate with external BMS
- LON FTT10 serial adaptor to communicate with external BMS managed with LON protocol
- TCP/IP serial adaptor to communicate with external BMS managed with SNMP protocol
- Motorized damper
- Condensate drain pump
- Top return or front discharge plenums
- Adjustable floor stands

Energy-saving units with backward-curved fans equipped with EC motor

Uniflair LE

TDEV – TUEV

Range

Cooling capacity: 20 ÷ 100 kW

Refrigerant R-410A

EC fans

Available versions:

- Downflow (TDEV)
- Upflow (TUEV)

Standard features

- Advanced microprocessor control system is available with local or remote user terminal
- The units are equipped with EC fans for efficiency maximization
- The structure of the unit is characterized by a self-supporting frame in galvanized steel with panels, and external panels are coated with RAL9003 epoxy-polyester paint and internally lined with heat and sound-proofing insulation
- Electronic expansion valve is controlled by the microprocessor and a dedicated software that increases the precision of the cooling and the energy efficiency of the cooling cycle
- Unit is equipped with an indirect free cooling system that provides the required cooling capacity when the external temperature is lower than the internal ambient, and compressor power consumption is minimized while internal and external environments are kept separate
- The cooling coil is designed for an elevated SHR and reduced pressure drops in the air section, and is made from copper tubes mechanically expanded on aluminum fins, complete with a hydrophilic treatment
- The cooling coil is characterized by CW and direct expansion circuits interlaced to increase the efficiency of the unit in all running conditions
- Internal water-cooled condenser braze is welded and made of AISI 304 stainless steel
- Uniflair LE units are ETL and cETL listed, and meet US Department of Energy (DOE) efficiency standards
- High-efficiency, MERV8-pleated air filters are housed in a metal frame and equipped with a dirty filter differential pressure switch and low airflow differential pressure switch
- The Uniflair LE range offers the possibility to select units equipped with two compressors (tandem) for each circuit, which grants better efficiency and regulation capacity at partial loads (models with the **21 or **42 suffix)
- Total front access is available for unit maintenance
- The electrical panel is situated in a compartment separated from the airflow and comp lies with the 2006/95/EC directive and related standards
- Microprocessor control system includes:
  - Integrated management of the cooling modes monitoring room temperature, external temperature, and glycol circuit temperature
  - Integrated management of the EEV and refrigerating circuit parameters
  - Local user terminal with external accessibility
  - Integrated LAN card for local network connection of a group of CRACs
  - Rotation and active stand-by management
  - Free contact for general and two for addressable alarms
  - Remote on/off switch
  - Ability to interface with modbus protocol directly on RS485 serial card
  - Ability to interface with main external communication protocols: BACnet, Lonworks, Trend, Metasys, TCP/IP, SNMP, and EcoStruxure platform

Technical data

	TDEV-TUEV model		0511	1121	1822
	Power supply	V/Ph/Hz	230/3/60, 460/3/60, 575/3/60		
	Fans		1	2	2
	Airflow	CFM	3500	7100	9300
	Number of compressors		1	2	2
	Number of circuits		1	1	2
Upflow units					
DX Mode	Net total cooling capacity	Btu/Hr	58000	118000	169000
	Net sensible cooling capacity	Btu/Hr	58000	118000	169000
Free-cooling Mode	Net total cooling capacity	Btu/Hr	47000	87000	136000
	Net sensible cooling capacity	Btu/Hr	47000	87000	136000
Downflow units					
DX Mode	Net total cooling capacity	Btu/Hr	58000	118000	169000
	Net sensible cooling capacity	Btu/Hr	58000	118000	169000
Free-cooling Mode	Net total cooling capacity	Btu/Hr	44000	87000	136000
	Net sensible cooling capacity	Btu/Hr	44000	87000	136000
	Dimensions				
	Height	in	77.1	77.1	77.1
	Length	in	39.7	67.7	85
	Depth	in	29.5	34	34

	TDEV-TUEV model		2242	2542	2842
	Power supply	V/Ph/Hz	230/3/60, 460/3/60, 575/3/60		
	Fans		3	3	3
	Airflow	CFM	12600	12600	12600
	Number of compressors		4	4	4
	Number of circuits		2	2	2
Upflow units					
DX Mode	Net total cooling capacity	Btu/Hr	240000	254000	272000
	Net sensible cooling capacity	Btu/Hr	235000	236000	245000
Free-cooling Mode	Net total cooling capacity	Btu/Hr	289000	285000	292000
	Net sensible cooling capacity	Btu/Hr	289000	285000	292000
Downflow units					
DX Mode	Net total cooling capacity	Btu/Hr	232000	249000	260000
	Net sensible cooling capacity	Btu/Hr	223000	239000	236000
Free-cooling Mode	Net total cooling capacity	Btu/Hr	279000	278000	251000
	Net sensible cooling capacity	Btu/Hr	279000	278000	226000
	Dimensions				
	Height	in	77.1/85.6*	77.1/85.6*	77.1/85.6*
	Length	in	101.5	101.5	101.5
	Depth	in	34	34	34

Note: Rating conditions are 75 °F (24 °C), 45% RH
*Downflow models

Construction options

- Immersed electrode humidifier
- Low surface temperature electrical heaters with extended fans, complete with double safety thermostat and manual resetting

Accessories

The units can be supplied with the following external accessories:

- Remote, semi-graphic user terminal
- RS485 serial adaptor to communicate with external BMS
- LON FTT10 serial adaptor to communicate with external BMS managed with LON protocol
- TCP/IP serial adaptor to communicate with external BMS managed with SNMP protocol
- Motorized damper
- Condensate drain pump
- Top return or front discharge plenums
- Adjustable floor stands

Chilled water units with backward-curved fans equipped with EC motor

Uniflair LE

TDCV – TUCV

Range

Cooling capacity: 20 ÷ 160 kW

Refrigerant chilled water

EC fans

Available versions:

- Downflow (TDCV)
- Upflow (TUCV)

Standard features

- Advanced microprocessor control system is included with local or remote user terminal
- The units are equipped with the latest generation EC Fans for efficiency maximization
- The structure of the unit is characterized by a self-supporting frame in galvanized steel with panels, and external panels are coated with RAL9003 epoxy-polyester paint and internally lined with heat and sound-proofing insulation
- The unit can be selected with a two-way or three-way valve and an actuator integrated with the microprocessor
- The cooling coil is designed for an elevated SHR and reduced pressure drops in the air section, and is made from copper tubes mechanically expanded on aluminum fins, complete with a hydrophilic treatment
- High-efficiency, MERV8-pleated air filters are housed in a metal frame and equipped with a dirty filter differential pressure switch and low airflow differential pressure is available for unit maintenance.
- The electrical panel is situated in a compartment separated from the airflow and complies with the 2006/95/EC directive and related standards
- Uniflair LE units are ETL and cETL listed. Units meet US Department of Energy (DOE) efficiency standards
- Microprocessor control system includes:
  - Regulation logic of cooling capacity and airflow integration
  - Local user terminal with external accessibility
  - Integrated LAN card for local network connection of a group of CRACs
  - Rotation and active stand-by management
  - Free contact for general and two for addressable alarms
  - Remote on/off switch
  - Ability to interface with modbus protocol directly on RS485 serial card
  - Ability to interface with main external communication protocols: BACnet, Lonworks, Trend, Metasys, TCP/IP, SNMP, and EcoStruxure platform

Technical data

TDCV-TUCV model		1000	1200	2500	4000	4300*
Power supply	V/Ph/Hz	230/3/60, 460/3/60, 575/3/60				
Fans		1	1	2	3	3
Airflow	CFM	6000	6300	11000	15300	17300
Net total cooling capacity	Btu/Hr	100000	122000	232000	342000	437000
Net sensible cooling capacity	Btu/Hr	94000	114000	222000	329000	418000
Flow Rate	GPM	20.5	25.1	47.6	70.3	89.7
Dimensions						
Height	in	77.1	77.1	77.1	77.1	85.6
Length	in	51.5	51.5	67.7	101.5	101.5
Depth	in	34	34	34	34	34

Note: Rating conditions are 75 °F (24 °C), 45% RH
*Available in Downflow only

Construction options

- Immersed electrode humidifier
- Low surface temperature electrical heaters with extended fans, complete with double safety thermostat and manual resetting
- Discharge temperature sensor integrated with the microprocessor to allow discharge temperature control

Accessories

The units can be supplied with the following external accessories:

- Remote, semi-graphic user terminal
- RS485 serial adaptor to communicate with external BMS
- LON FTT10 serial adaptor to communicate with external BMS managed with LON protocol
- TCP/IP serial adaptor to communicate with external BMS managed with SNMP protocol
- Automatic floor pressurization system
- Motorized damper
- Top return or front discharge plenums
- Adjustable floor stands

Chilled water units with backward-curved fans equipped with EC motor; fan module can be installed under or above raised floor

Uniflair LE

HDCV

Range

Cooling Capacity: 30 ÷ Cooling Capacity: 200kW

Refrigerant chilled water

EC fans

Available versions:

- Downflow Single Coil

Standard features

- Unit is made of two sections for installation of fan module under the raised floor and increase the coil surface for energy efficiency maximization
- Advanced microprocessor control system
- Large surface copper and aluminum cooling coil is provided for pressure drop minimization
- EC fan module is equipped with a circular plug in connectors for quick and failure-free installation; the module is supplied with safety protection grills on the sides in case of underfloor installation
- Adjustable fan speed meets energy-saving and load-sharing logics
- Electric panel conforms to EC standards (2006/95/EC and EMC 2004/108/EC directives)
- High-efficiency, pleated air filters are housed in a metal frame and filter differential pressure switch.
- A low airflow differential pressure alarm switch is included
- Full frontal accessibility is available for maintenance
- CW inlet temperature measurement is integrated in the microprocessor
- Integrated Discharge Temperature Control and Room Moisture Control
- Zinc-free CW circuit
- Immersed electrode humidifier is included
- Electrical heaters included with aluminum finned heating elements
- Phase sequence control
- Uniflair LE units are ETL and cETL listed and meet U.S. Department of Energy (DOE) efficiency standards
- Microprocessor control system in addition allows:
  - Integration with Uniflair Chillers for optimized management logics
  - Free contact for general and two for addressable alarms
  - Remote on/off switch
  - Integrated RS485 serial card for direct connection to external BMS (modbus)
  - Second slot for additional serial card for BMS connection (optional)
  - Clock card integrated in the unit
  - Ability to interface with main external communication protocols: BACnet, Lonworks, Trend, Metasys, TCP/IP, SNMP, and EcoStruxure platform

Construction options

- Immersed electrode humidifier
- Low surface temperature electrical heaters with extended fans, complete with double safety thermostat and manual resetting
- Discharge temperature sensor integrated with the microprocessor to allow discharge temperature control

Accessories

The units can be supplied with the following accessories:

- Double power supply with automatic changeover and manual selection with integrated ultra capacitor
- Intelligent dehumidification with cooling capacity limiting device
- Automatic floor pressurization system
- CW outlet temperature measurement integrated in the microprocessor
- Energy meter and CO_2 emissions calculator integrated in the unit
- Ultra capacitor for single power supply units
- Integrated base frame
- Flowmeter

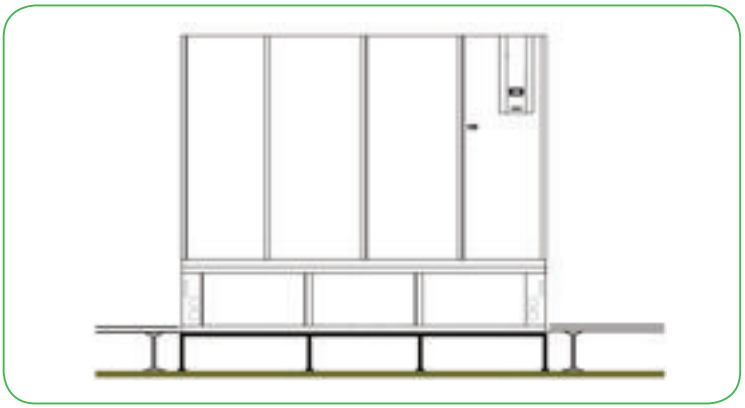
Technical data

HDCV model		5000
Power supply	V/Ph/Hz	230/3/60, 460/3/60, 575/3/60
Fans		4
Airflow	CFM	23500
Net total cooling capacity	Btu/Hr	581000
Net sensible cooling capacity	Btu/Hr	513000
Flow rate	GPM	120.5
Dimensions		
Height	in	77.1/98.8*
Length	in	122.4
Depth	in	34

Note: Rating conditions are 75 °F (24 °C), 45% RH
*With underfloor fan assembly

Installation options

Unit with fan plenum installed under the raised floor



Unit with fan plenum installed above the raised floor

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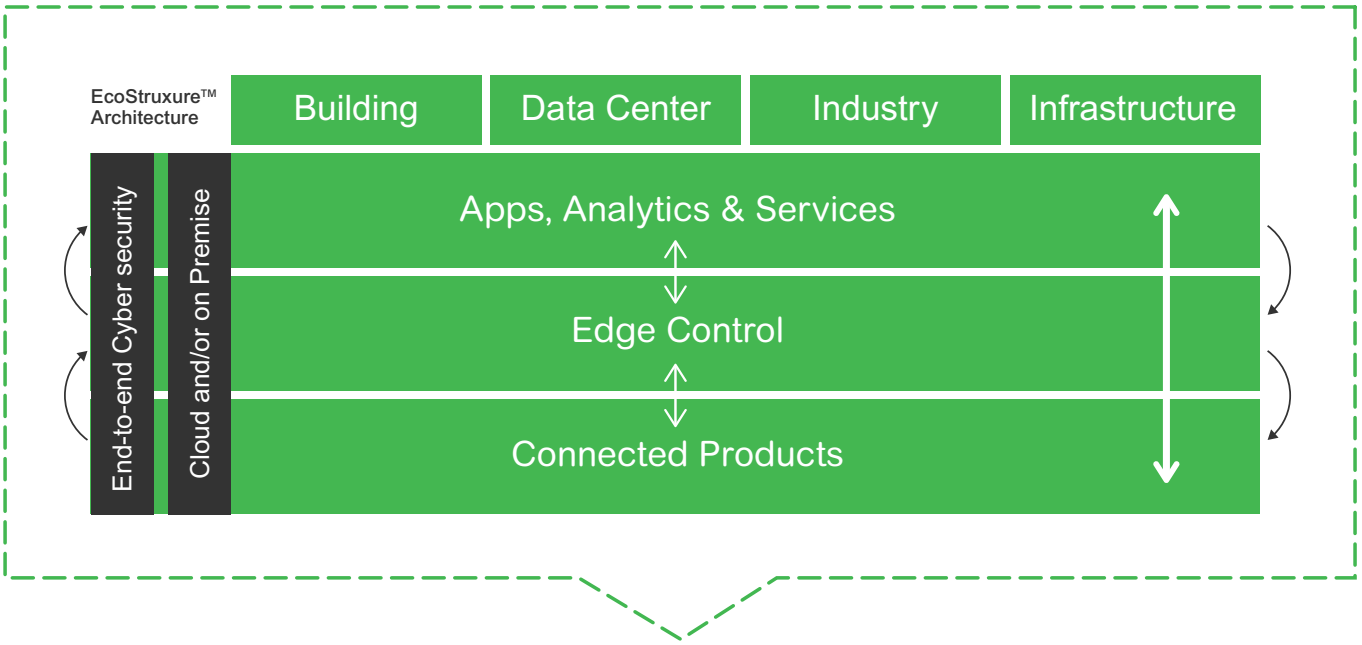

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