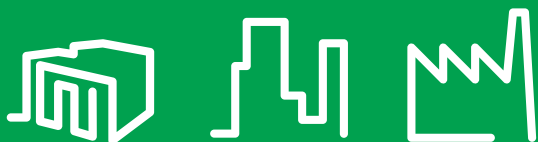


High Performance Chillers

Aquaflair

Uniflair chillers designed for technical cooling applications
in data centers, buildings, and industrial processes



Schneider
Electric

Aquaflair

Uniflair chillers

Combining cutting-edge technology with energy efficiency and environmental protection is the basis of these units. Uniflair™ chillers are designed to offer a complete solution for mission-critical installations. High energy efficiency, complete reliability, and total flexibility guarantee total cost of ownership (TCO) reduction and the integration in Tier III and IV data centers and mission-critical installations.

All the units are all-in-one for easy design and installation and completely configurable to guarantee use in multiple applications and environmental conditions for a continuous and quiet operation.

The component selection includes excellent technologies such as integrated automatic transfer switches, scroll, screw, and oil-free compressors, variable speed technology driven and monitored by the chiller microprocessor control both for compressors and for pumps.

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The solution for IT mission-critical applications

Total cost of ownership

High performance technological solutions. Optimize the unit operation at any load or ambient condition, guaranteeing an extremely low power consumption.

Integrated free-cooling system. An efficient method for reducing the energy consumption at low outside air temperatures to assist in data center or process cooling energy optimization.

Modular strategy. Mechanical equipments combined with control devices allow a modular installation which guarantees to follow the growth of the site, reducing the CapEx and deferring the investment throughout the years.

Optimized management. Connection between the computer room air conditioners and the chillers guarantees energy maximization, based on real, instantaneous load conditions.

Quick restart. Full-load operation in less than three minutes with specific settings permits undersizing of the storage tanks.

Oil-free solution. Centrifugal compressors operating without oil minimize the energy impact of the chiller.

Tandem compressors. Quiet and efficient operation of compressors, connected on a common circuit for staged capacity control.

Integrated hydronics package. Includes all the necessary components to make one connection to the chiller without the need of external connections to auxiliary equipment, such as pumps, thus increasing the speed of deployment.

Integrated pumps adjustment system. Onboard variable speed drive (VSD) pumps are available for adaptation to changing conditions on-site or for continuous adjustment of the available pressure (optional).

Serviceability

Operational service. Allows critical components to be maintained/replaced while the system is in operation.

Easy service access. Allows for all serviceable components to be replaced/maintained by easily accessible panels/doors.

Service monitoring. All the monitoring devices onboard the unit allow for preventative maintenance and general service during system operation.

Availability

Compressors. Scroll and screw compressors utilize few moving parts for increased reliability and life expectancy.

Oil-free solution. Centrifugal compressors which operate without oil increase operational availability.

Modulating compressors. Ease the mechanical and electrical stress on compressor start-up.

Redundant components. Single points of failure in the system have redundant components to maintain availability and reliability.

Dual A-B power inputs. Draws power from the secondary line for power protection with dual feeds for redundancy (optional).

Separate power input. Draws power from the external UPS for mainboards and heaters to monitor and protect the unit even in complete power failure mode.

Quick restart. Full-load operation in less than three minutes with specific arrangements guarantees continuous chilled water availability to the data center.

Active response controls. Monitors and actively adjusts cooling capacity to ensure proper server inlet temperatures. Through the microprocessor controller, visibility into the operation and health of the unit is provided.

Electronic expansion valve. Refrigerant flow optimization at any load and temperature conditions. Continuous indirect refrigerant charge monitoring.

Wide range for ambient temperature design.

Guarantees continuous operation at ambient temperatures from -25 °C up to 50 °C. Wider limits are available upon request.

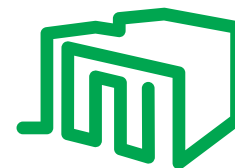
Tier III- and IV-ready. Units are able to be fully integrated into the latest generation of data centers for guaranteed continuous operation.

Manageability

Local area network. Creates a shared communication between all available units for energy optimization and management during emergency situations.

Building management system integration. Units are able to send alarms and data points to a single system in order to manage critical building infrastructure from a remote location.

Network interface. Provides management by connecting the device directly to the network with a dedicated IP address, avoiding the need for a proxy such as a server. Monitoring is available via Web browser.



Aquaflair chillers are designed combining cutting-edge technology with extensive tests for energy efficiency and continuous availability

Energy savings, complete reliability, and total flexibility guarantee TCO reduction and integration in Tier III and IV data centers.

The all-in-one design and the complete configurability allow easy installation and tailored solutions to meet the specific needs of each critical application.

Some of the features described may be available only for some models or configurations. Please refer to the products' technical section for details.

-30%

of annual energy consumption* thanks to the integrated free-cooling.

* Average value in a medium DC in Europe.

99.99%

is the reliability of Tier III and Tier IV* data centers according to Uptime Institute certification standards.

* Aquaflair chillers are Tier III- and Tier IV-ready design.

The issue-free chiller solution for industrial processes

Multiple processes adaptability

Wide range of operation features. Units are able to adapt to a large variety of industrial processes at any external conditions.

Engineering-to-order design. Cooling system design can be adjusted to fit a specific application.

Multiple set point for water temperatures.

Guarantees different settings for multiple processes stages such as plastic manufacturing, healthcare equipment manufacturing, and food and beverage applications.

Wide range for ambient temperature design.

Guarantees continuous operation from -40 °C up to 50 °C.

Integrated hydronics package. Includes all the components required to make one connection to the chiller, thus increasing the speed of deployment.

High head pressure pumps. Are available to be integrated and managed by the chiller.

Integrated primary and secondary loop. Enables quick and easy design and installation for all applications.

Close control on water temperature. Enables the use on high-precision applications like laser manufacturing or biomedical devices.

Continuous load adaption. Is available on the whole range to follow all phases of the manufacturing process.

Non-ferrous materials. Available for water circuits where ferrous materials must not be present.

Heat exchangers treatment. Protects air side heat exchangers in saline or aggressive environments.

Reliability

Safe and reliable design. Guarantees operation in the most varied working conditions thanks to the use of cutting-edge solutions and to the availability of a wide range of accessories and options.

Pretested and validated solution. All units are tested at the end of the manufacturing process.

Compressors. Utilize few moving parts for increased reliability and life expectancy.

Redundant components. Redundancy is applied on the critical sections of the units to maintain availability on 24/7 operating processes.

Electrical panel. Units are equipped with double closure panels, certified for outdoor use and manufactured in compliance with all safety standards.

Dual A-B power inputs. Draws power from the secondary line for power protection with dual feeds for redundancy.

Quick restart. Full-load operation in less than three minutes with specific arrangements guarantees continuous chilled water availability to the data center.

Active response controls. Monitor and actively adjust the cooling capacity to ensure proper temperatures. Through the microprocessor controller, visibility into the operation and health of the unit is provided.

Current monitoring. Allows continuous monitoring of the current absorbed from the compressors to signal any difference from default values.

Total cost of ownership

No waste of water. Thanks to the use of water in a closed circuit.

High performance technological solutions. Optimizes the unit operation at any load or ambient condition, guaranteeing extremely low power consumption.

Undersize for storage tanks. Quick restart allows full-load operation in less than three minutes with specific settings.

Integrated free-cooling system. An efficient method for reducing the energy consumption at low outside air temperatures to assist in energy optimization.

Serviceability

Reduced maintenance. Closed circuit operation, proven technology, and design and test of all refrigeration circuits reduces maintenance over the lifetime of the unit.

Operational service. Critical components can be maintained/replaced while the system is working.

Service monitoring. All the onboard monitoring devices allow preventive maintenance and check of the operation while the system is working.

Manageability

Easy to use. The local user terminal displays all unit settings and data points. The most used parameters are visible on the main screen.

Network interface. Provides management by connecting the device directly to the network or to the management system avoiding the need of a proxy such as a server.



The use of chilled water is essential in many industrial production and transformation processes.

Needs vary from heat absorption to the necessity to keep components, rooms, and working phases at controlled temperature conditions.

Reliability and easy adjustment of the cooling system to the specific application are key factors to ensure an uninterrupted production and to optimize the process reducing costs.

-10 °C

Water inlet temperature up to 30 °C and outlet temperature down to -10 °C allow application in many industrial processes.

±0.2 °C

Close control water temperature guarantees use in high-precision applications like laser machineries or biomedical devices.

Cooling and heating for innovative building systems

Operative cost OpEx

High efficiency technological solutions. Optimize the unit operation at any load or ambient condition, guaranteeing an extremely low power consumption.

Excellent performance at any load or temperature conditions. All the ranges, and particularly the modulating units, are characterized by high efficiency at part loads or at low ambient conditions with a short payback time compared to conventional chillers, reducing consistently the operational costs.

Modulating compressors. VSD centrifugal compressors are able to modulate the cooling capacity to match the actual thermal load, therefore minimizing energy consumption of the chiller and requiring little to no backup water tanks.

Heat pumps. Allows 65 percent heating produced via renewable energy. Modulating heat pumps guarantee 30 percent reduction compared to a traditional solution.

Heat recovery. Optimize the energy usage in reheating and heating systems.

Geothermal applications. Are available for installation with complete renewable energies usage.

Oil-free solution. Centrifugal compressors operating without oil minimize the energy impact of the chiller.

User-friendly control system. Contains all necessary operating and safety controls with a simple interface and a large screen for quick and easy checks on unit operation and maintenance.

Underflow air distribution. Is an efficient solution to provide cooling and heating in the building.

BMS integration. Units are able to send alarms and data points to a single system (natively integrated with Schneider Electric SmartStruxure platform or using specific adaptor for other BMS platforms) in order to manage critical building infrastructure from a remote location.

Innovative defrosting system. Occurs only in necessary conditions, reducing the energy consumption on heat pumps, and improves heating operation.

Chilled beams and radiant panels optimization. The units are designed to operate with smart cooling and heating systems, maximizing the efficiency at the typical water set points for those applications.

Integrated shifting set point system. Adapts the water temperature to the ambient conditions with a consequent reduction in energy consumption.

Investment optimization CapEx

Low noise impact. Allows installation in different areas, limiting the expense for noise barriers or louvers.

Package solution. Includes all the necessary components to make one connection to the chiller without the need of external connections to auxiliary equipment, such as pumps, thus increasing the speed and reducing cost of deployment.

Underflow air distribution. Enables quick and low-cost modifications of the internal building layout.

Low starting current. VSD and oil-free technology on compressors allow for low starting currents. A soft starter is also possible to add to the unit.

Water heat recovery. Integrated to provide water for sanitary uses without boilers or heaters.

Easy and quick installation. The units are totally assembled, cabled, and refrigerant and oil charged in the factory. They are complete with all the control and protection devices necessary. Only electrical and hydraulic connections are made on-site.

Reduced mandatory controls. Reduces the ordinary checks cost when compared to boilers or other.

Tax reduction. Is possible thanks to heat pumps or renewable energies.

Existing plant reconversion. Using high water temperature heat pumps (up to 55 °C water).

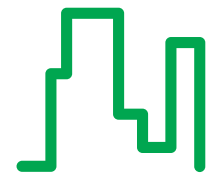
Quiet operations

Low noise operation. Both standard Low Noise and optional Ultra-Low Noise versions guarantee very low acoustic impact, guaranteeing a wide range of installations, even where the noise restrictions are very tight (hospitals, hotels, etc.).

Oil-free solution. Magnetic bearing compressors allow extremely quiet operation.

Variable speed fans. Variable speed fans reduce noise impact during off-peak cooling periods. Benefits are maximized with electronic commutated motor fans, available on all the range.

Internal installation. Backward curved centrifugal fans are available in the middle range allowing the possibility to install the chiller inside building where the air is taken/discharged through duct or plenums.



Aquaflair systems offer an efficient, quiet, and flexible solution for buildings.

Where high performance cooling is crucial, Uniflair long experience on mission-critical installations guarantees investment optimization, short design and on-site operation, ease of maintenance, complete flexibility, and quiet operation.

Aquaflair units are usually installed in hospitals, hotels, and small and large buildings designed for smart operation.

Completely configurable units allow tailored solutions to meet the specific needs of each application.

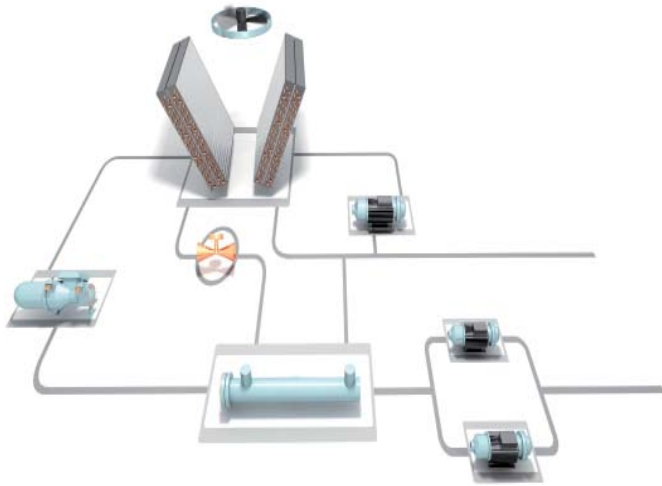
45 dB(A)

Is the limit for most residential areas during night.

-30%

Is the annual energy reduction allowed by variable speed technology compared to traditional heat pumps.

Integrated free-cooling system



Free-cooling is an efficient method to reduce energy consumption at low outside air temperatures. It enhances energy optimization in data center and process cooling.

According to the ambient temperature, the chilled water is partially or totally produced exploiting the thermal exchange with the external air. This significantly reduces the chillers' energy impact.

When the external air temperature is low enough, the microprocessor control system activates the free-cooling pump, which circulates water inside special heat exchange coils. Water is cooled by external air brought in by the fans, which, together with the pump, are the only components that absorb energy.

Intelligent free-cooling (IFC)

Designing a reliable system means choosing units which are both intrinsically reliable and including "N+1" or "N+N" redundancy logic.

With IFC, all the available units are connected allowing chilled water to circulate through all the free-cooling coils, thus increasing the free-cooling surface and the benefit in terms of thermal dissipation:

+7% on Schneider Electric free-cooling*
+35% on traditional systems*

* Average values.

Glycol-free installations

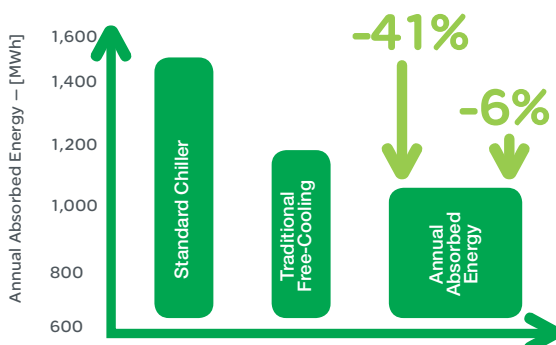
Designed for applications where the use of glycol is not allowed in the data center, this solution uses an intermediate heat exchanger to limit glycol in free-cooling circuit only, while using water in the main circuit.

The careful selection and position of the intermediate heat exchanger allows the installation of the onboard main pump too, to minimize the efficiency losses typical of intermediate heat exchangers.

delta T = 2 °C
 in the heat exchanger*

* Average values.

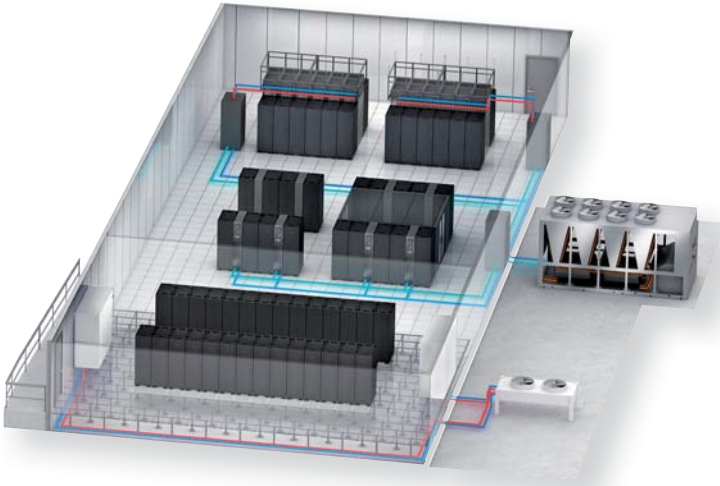
Schneider Electric free-cooling OpEx savings



		STANDARD CHILLER	STANDARD FREE-COOLING	SE FREE-COOLING
Energy consumption	kWh	1,424,766	1,193,799	1,160,297
Energy saving	%	0	19%	23%
Cost saving	€	0	-25,406	-29,092

Load: 750 kW
 Location: Paris
 €/kWh: 0.1
 Design water temperature: 10 °C/15 °C

Optimized management

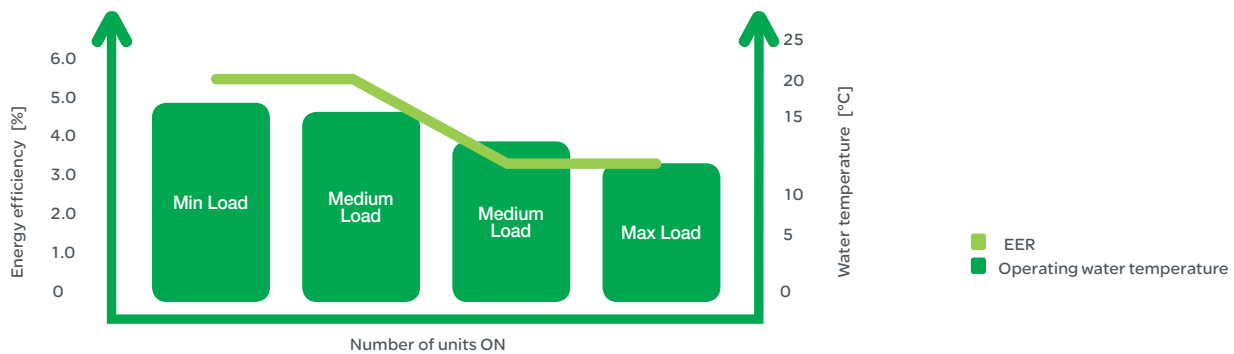


Management of the whole system allows energy consumption to be optimized and integrated control strategies to be implemented, which would otherwise not be possible.

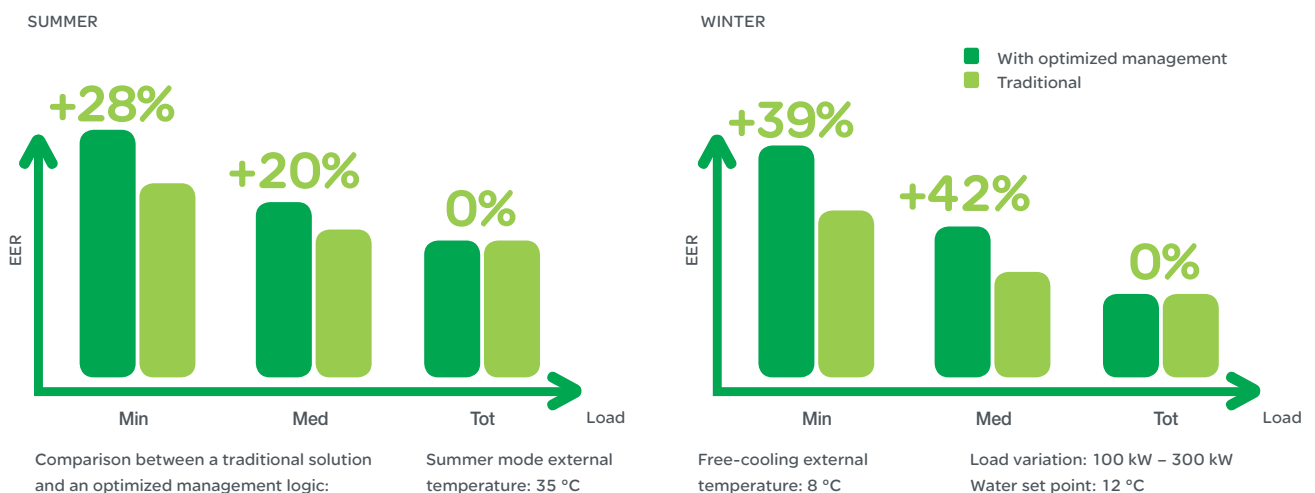
All the Schneider Electric cooling resources can therefore be linked* together in a network to maximize the operating parameters and the current required. Row and room cooling units communicate to the chiller, reducing the energy requirement by means of a "tracking logic" for the current thermal load. The chilled water temperature varies dynamically to minimize compressor consumption and maximize the use of free-cooling, while maintaining the optimum temperature in the data center.

* Specific configuration may be required.

How it works



Energy saving improvement



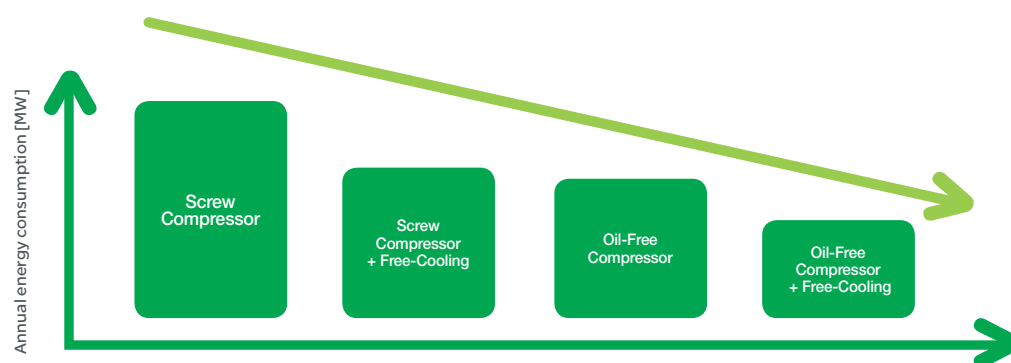
Variable speed compressors

Inverter scroll and oil-free centrifugal solutions

Variable speed compressors, normally driven by inverter, are among the most interesting solutions that characterize modern chillers. There are different solutions according to the application size, i.e., inverter-driven scroll or oil-free centrifugal compressors, but all of them provide a high level of reliability and may be implemented in a wide range of applications and operating parameters.

Main benefits of variable speed compressors

- Increased efficiency at partial loads thanks to the continuous regulation of the cooling capacity and installation of the compressors on the same cooling circuit.
- Energy efficiency is maintained even during mixed-mode operation by optimizing compressor usage in conjunction with free-cooling at full load.
- Regulation of the cooling capacity over a wide operating range, i.e., from 10% to 100% continuously.
- High precision on chilled water temperatures (± 0.2 °C), thanks to continuous regulation by means of an inverter.
- Limitation of the maximum absorbed current (LRA) since the inverter-driven compressor can always be started up at low speed.
- Limitation of noise level.
- Increased system reliability thanks to the reduction in compressor inrush current, thus reducing mechanical and electrical stress.
- Reduction or elimination of water tanks on the hydraulic lines.



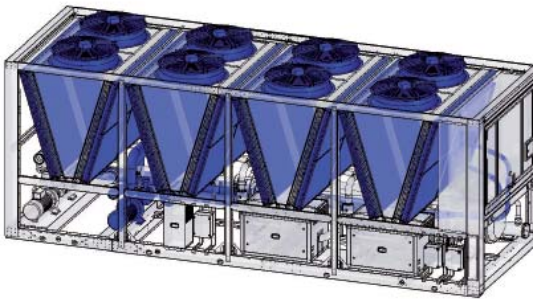
Based on 1 MW free-cooling chillers at the climatic profile of Paris. Nominal conditions: water 10/15 °C, 20% glycol.

Type of chiller	100 Kw	Paris	Frankfurt	Milan	Madrid
Traditional unit	kWh	57,271	56,524	57,261	58,095
Unit with inverter	kWh	46,843	46,183	46,778	47,763
	%	-18%	-18.3%	-18.3%	-17.8%

Type of heat pump	100 Kw	Paris	Frankfurt	Milan	Madrid
Traditional unit	kWh	24,184	33,853	16,154	29,572
Unit with inverter	kWh	16,252	24,377	11,226	20,163
	%	-32.8%	-28%	-30.5%	-31.8%

Comparison of annual energy consumption of a traditional unit and a unit equipped with a variable speed compressor (note: traditional unit has two ON/OFF scroll compressors placed on the same refrigerant circuit; modulating unit is equipped with two scroll compressors, one of which is variable speed, on the same refrigerant circuit).

Prepackaged solutions



Uniflair chillers are designed to integrate the main electrical and hydraulic components onboard the units. Free-cooling circuit, primary pumps, VSDs, water tanks, and automatic transfer switches are available to be factory installed which reduces the design and installation phases and allows a solution ready to be used.

Thanks to this logic, the availability level is further increased since the usual single point of failure is removed, for instance:

- The integrated ATS connects the unit to both the redundant power supplies. According to the line presence, the unit manages the connection while the control board operates due to the Uniflair backup system.
- An additional external UPS* connection is available for critical components protection.
- The default network connection allows for group management without a master or external device which could represent a critical item.
- The possibility to choose onboard pumps guarantees better availability when compared to single external pump group.

Variable speed driven onboard pumps



Choosing the best solution for pumps is certainly one of the most important challenges for the designer. Uniflair chillers have an onboard pump group which can be inverter-driven.

Variable speed driven pumps integrated in the units and driven by the chiller controller allow:

- Increased efficiency due to the continuous speed adaption on the pressure drops of the circuit.
- Increased flexibility and modularity. It is possible to change and adapt the available head pressure from the chiller terminal, guaranteeing on-site optimization and modular installations.
- Reduction in capital expense, since a single-circuit design can be easily applied, saving the extra cost for the additional devices typical of primary/secondary circuits and manifolds, tanks, and secondary pumps.

** Specific configurations may be required.*

Advanced control strategies



All the control software solutions for the Aqualflair range are developed by Schneider Electric and specifically designed for each unit configuration. This choice enables the company to equip each machine with a tailor-made control which manages all aspects of the unit.

- Precision: the units use advanced algorithms to accurately control the chilled water temperature.
- Availability: all the monitoring devices onboard the unit allow a preventive maintenance and a check of the working operation while the system is functioning.
- Amperage monitoring permits continuous supervision of the compressors' absorbed current to signal possible discrepancies with the default values.
- Quick restart: chiller control software provides full cooling capacity within three minutes* after power failure, optimizing reliability and reducing the capital expense thanks to the downsize of backup water tanks.
- Local area network: creates a shared control between all the available resources for energy optimization and management of emergency situations.
- Connectivity: the unit sends alarms and data points to manage critical building infrastructure from a single system**. Additional network interfaces provide management by connecting the device directly to the network with a dedicated IP address. This eliminates the need for a proxy such as a server. Monitoring is available via Web browser**.

Acoustic impact





































Reduction in noise impact is one of the most critical issues designers are called on to solve when choosing plant systems.

Uniflair chillers offer low noise solutions with extremely low acoustic impact thanks to:

- EC motor Acousti-Composite fans with high efficiency and low acoustic impact.
- Completely isolated soundproofing enclosures for compressors.
- Variable speed compressors, to adapt the noise emission to the thermal load.
- Extremely quiet oil-free centrifugal solution*.
- Extra quiet regulation algorithms which control the rotation speed of the fans.

** Available on large chillers only.*

*** With specific adaptor.*

		Small	Medium
Air-cooled units	Cooling only	  Uniflair LRAC Page 14 – 15	  Uniflair ERAC Page 16 – 17
	Heat pumps	  Uniflair LRAH Page 14 – 15	   Uniflair ISAC Page 18 – 19
Free-cooling units	Cooling only		  Uniflair ERAH Page 16 – 17
	Heat pumps		   Uniflair ISAH Page 18 – 19
Water-cooled units	Cooling only		  Uniflair ERAF Page 26 – 27
	Heat pumps		   Uniflair ISAF Page 28 – 29
Units with ducted fans	Cooling only		  Uniflair ERCC Page 40 – 41
	Heat pumps		   Uniflair ISCC Page 42 – 43
	Free-cooling		  Uniflair ERCH Page 40 – 41
			   Uniflair ISCH Page 42 – 43
			  Uniflair ERCF Page 44 – 45
			   Uniflair ISCF Page 46 – 47

Large



Uniflair TRAC
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Uniflair TRAH
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Uniflair TRAF
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Extra Large



Uniflair BREC
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Uniflair BCEC
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Uniflair BREF
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Uniflair BCEF
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Uniflair BRWC
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Uniflair BCWC
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Uniflair BRWH
Page 36 – 37



Scroll compressors



Screw compressors



Oil-free compressors



Variable speed drive compressors

Uniflair LRAC/LRAH



Range

Cooling capacity: 6 ÷ 40 kW

Heating capacity: 7 ÷ 43 kW

Available versions

- Low noise
- Top operating performance
- Condensing version*

Refrigerant R410A

Scroll compressor/s

Standard features

- Designed with a minimal footprint.
- Self-supporting frame in galvanized steel (color RAL9022) with panels varnished with epoxy powders in compliance with the ASTM B117 norm.
- Between one to two hermetic scroll compressors with internal thermal protection and anti-vibration feet.
- Crankcase heaters**.
- Ecological refrigerant: R410A.
- Refrigerant circuit in compliance with EC norms (PED 97/23/EC Directive) in copper tubes mainly including a filter dryer, water flow switch, thermostatic valve with external equalization (stainless steel made), and high and low pressure switches.
- Metal grille panel to protect the air side heat exchanger.
- Cycle inversion on the refrigerant side with four-way reversing valve**.
- Stainless steel, brazed plate heat exchanger insulated with closed cell, expanded polyurethane.
- Antifreeze heater on evaporator**.
- Air side heat exchanger with aluminum fins and mechanically expanded copper tubes.
- Axial fans, statically and dynamically balanced, with sickle blades and with safety protection grilles.
- Soundproofing polymeric impeller for each fan.
- Condensation control including continuous regulation of fan speed.
- Electric panel conforming to EC Directive 2006/95/EC and Directive EMC 2004/108/EC with auxiliary 12 V circuit, general cut-off switch, magneto-thermal protection cut-off switches.
- UTS microprocessor control system with local user control and monitoring terminal with LCD display and LED signals for all working parameters: chilled/hot** water temperature regulation, antifreeze protection, compressor timing and protection, fan speed regulation, alarm code signalling, centralization for general alarm control and remote ON-OFF switch, and remote cycle inversion**.

- Water flow differential pressure switch.
- Predisposition for cooling/heating systems with heating panels.
- Rubber anti-vibration feet.

Total operating performance

- Electronic expansion valve driven by the microprocessor control.
- Advanced UPCOxs microprocessor control system with specific algorithm to:
 - Outlet water temperature regulation
 - Advanced management of compressors run through automatic set-point sensitivity regulation
 - Advanced management of the defrosting function to minimize cycle inversions**
 - Advanced antifreeze protection on evaporator
 - Integrated LAN card for local network connection of a group of chillers (up to 10 units, with one or two standby units)
- Moreover, the microprocessor control system enables:
 - Remote cycle inversion**
 - The set point adjustment by a 0 V – 10 V external signal
 - The management and selection of double set point
 - Free contact for general alarm and two addressable alarms
 - Remote ON-OFF control
 - The ability to interface with main external communications protocols: Modbus, BACnet, LonWorks, Metasys, TCP/IP, and SNMP

* Optional for LRAC, when possible.

** For LRAH.

Technical Data										
LRAC/LRAH Models		023B	032B	041B	054A	067A	090A	120A	137A	180A
Power supply	V/ph/Hz	230/1/50				400/3 + N/50				
Cooling capacity (1)	kW	6	8	10	14	17	19	27	33	39
Absorbed power (1)(2)	kW	1.6	2.3	3.1	4.6	4.8	6.3	9.1	10.7	12.7
EER (1)(2)		3.6	3.5	3.3	3.1	3.3	3.1	3.0	3.1	3.1
Heating capacity (3)	kW	6	9	10	15	18	21	30	36	42
Absorbed power (3)(2)	kW	1.8	2.5	2.9	4.3	5.3	6.1	9.1	10.7	13.4
Noise pressure level (4)	dB(A)	34	34	34	35	37	38	38	40	41
Fans/poles	nr.	1/6	1/6	1/6	1/6	2/6	2/6	2/6	3/6	4/6
Circuits/compressors	nr.	1/1	1/1	1/1	1/1	1/1	1/1	1/2	1/2	1/2
Compressor type		Scroll								
Evaporator		Plate								
Water tank	l	25	25	25	50	50	50	100	100	100
Dimensions and Weight										
Height	mm	650	650	650	1,271	1,271	1,271	1,271	1,271	1,271
Depth	mm	458	458	458	458	458	458	615	615	615
Width	mm	1,274	1,274	1,274	1,273	1,273	1,273	2,054	2,054	2,054
Weight (without hydronic kit)	kg	100	101	103	152	160	162	262	272	282
Weight (version with pump)	kg	104	105	107	159	167	169	273	281	291
Weight (version with water tank and pump) (5)	kg	116	117	119	179	187	189	300	308	318

1. Data refer to nominal conditions: water temperature 12/7 °C, external temperature 35 °C, R410A refrigerant, fouling factor 0.0 m² °C/W

2. Data refer to total absorbed power (compressors and fans)

3. Data refer to nominal conditions: water temperature 40/45 °C, external temperature 7 °C dry bulb, 6 °C wet bulb., R410A refrigerant, fouling factor: 0.0 m² °C/W

4. Data measured in free field at 10 meters from the unit operating without pump at nominal conditions, with fans at nominal conditions, coil side, Q=2 directional factor. At different conditions, with different configurations and/or with EC fans, noise values may vary.

5. Data refer to empty unit

Construction options

- Onboard water tank and pump.
- High head pressure pump*.
- Condensing unit*.
- Unit works down to -20 °C.
- Production of glycol water mixture at low temperatures option (down to -10 °C).
- Antifreeze protection on evaporator, water tank, and pump.
- RS485 serial adaptor used to communicate with Uniflair supervisory system or to interface with external BMS.
- LON® FTT-10 serial adaptor used to communicate with external BMS managed with LON protocol.
- Hot gas bypass disposal for a constant outlet water temperature, even with 0 to 100% charge variation (optional; only LRAC).
- TCP/IP serial adaptor used to interface with external BMS.
- Condensing coils equipped with safety grilles and filter.

* On request.

Options

- Remote user terminal for:
 - Display/entering of commands
 - Display unit status and alarms
- Chilled/hot water piping filter.

Uniflair ERAC/ERAH



Range

Cooling capacity: 50 ÷ 110 kW

Available versions

- Low noise
- Ultra-low noise

Refrigerant R410A

Scroll compressors

Standard feature

- Self-supporting frame in galvanized steel with panels varnished with epoxy powders (color RAL9022).
- Access panel to the unit equipped with handles and fast screws.
- Two hermetic scroll compressors with internal thermal protection, anti-vibration supports, and crankcase heaters (ERAH and low ambient temperatures version).
- Single refrigerant circuit* conforming to EC Directives (PED 97/23/CE) in copper tubing including filter dryer, liquid sight glass, dual flow thermostatic valve with external equalization, high and low pressure switches, and high pressure transducers.
- Environmentally friendly refrigerant R410A.
- Water side brazed plate heat exchanger in stainless steel insulated with closed cell expanded polyurethane
- Water flow differential pressure switch.
- Air side exchange coil with aluminum fins and mechanically expanded copper tubes.
- Refrigerant side cycle inversion with four-way inversion valve (ERAH).
- Acousti-Composite fans: sickle-blade axial fans, statically and dynamically balanced and made from composite materials for high efficiency and low acoustic impact with internal and external safety protection grilles.
- Modulating condensation control based on the condensation pressure.
- Electrical panel conforming to EC Directives (2006/95/EC and EMC 2004/108/EC) protection grade IP54 with auxiliary transformer, lockable general cut-off switch, magneto-thermal cut-off switches, and remote control.
- Sequence phase control.
- Anti-condensation heaters for the electrical panel (ERAH and low ambient temperature versions).
- Advanced UpCO1m control for:
 - Discharge water temperature regulation
 - Management of the electronic thermostatic valve
 - Monitoring of the refrigerant load
 - Self-adjustment of the set-point regulation
 - Advanced defrost operation management (ERAH)
 - Integrated LAN card
 - Compatibility with Modbus protocol via RS48
 - Compatability with the most common external BMS: LonWorks, BACnet, TCP/IP, Trend

* ERAC models with **22A suffix are available with two compressors on two circuits.

Technical Data											
ERAC/ERAH Models		0521A	0621A	0721A	0821A	0921A	0922A	1021A	1022A	1221A	1222A
Power supply	V/ph/Hz	400/3 + N/50									
Refrigerant circuits	nr.	1	1	1	1	1	2	1	2	1	2
Compressors	nr. x mod.	2 x scroll									
Fans	nr.	2	2	2	3	3	3	3	3	4	4
Evaporator	nr.	1	1	1	1	1	2	1	2	1	2
Evaporator	mod.	Plate									
ERAC — Low Noise Version											
Cooling capacity (1)	kW	44	53	61	71	78	78	91	90	105	105
Absorbed power (1)	kW	13,8	17,7	19,8	23	26	26	30,3	30,3	35,2	35,2
E.E.R. (1)(2)		3,22	2,97	3,10	3,10	3,01	3,02	2,99	2,98	2,98	2,98
ERAH — Low Noise Version											
Heating capacity (3)	kW	51	60	69	80	88	n.a.	103	n.a.	119	n.a.
Absorbed power (2)(3)	kW	14.5	17.5	19.7	22.8	25.9	n.a.	30.6	n.a.	35.6	n.a.
COP (2)(3)		3.49	3.41	3.51	3.51	3.41	n.a.	30.37	n.a.	3.35	n.a.
Noise pressure level (4)	dB(A)	42.6	43.5	44.0	44.3	44.3	44.3	53.4	53.4	54.7	54.7
ERAC — Ultra-Low Noise Version											
Cooling capacity (1)	kW	43	51	59	70	75	75	87	87	101	101
Absorbed power (1)	kW	14,3	18,5	20,9	22,97	27,4	27,4	32,99	32	37,1	37,1
E.E.R. (1)(2)		3,01	2,73	2,82	3,05	2,74	2,75	2,63	2,71	2,71	2,73
ERAH — Ultra-Low Noise Version											
Heating capacity (3)	kW	49	58	68	78	86	n.a.	100	n.a.	116	n.a.
Absorbed power (3)	kW	14.3	17.2	19.5	22.5	25.6	n.a.	30.5	n.a.	35.3	n.a.
COP (2)(3)		3.44	3.34	3.42	3.46	3.34	n.a.	3.27	n.a.	3.27	n.a.
Noise pressure level (4)	dB(A)	39.1	39.8	40.3	40.1	40.1	40.1	49.6	49.6	51	51
Dimensions and Weights											
Height	mm	1,560	1,560	1,560	1,560	1,560	1,560	1,875	1,875	1,875	1,875
Depth	mm	1,190	1,190	1,190	1,190	1,190	1,190	1,190	1,190	1,190	1,190
Width	mm	2,010	2,010	2,805	2,805	2,805	2,805	3,075	3,075	3,075	3,075
Weight ERAC basic (6)	kg	607	612	730	760	766	777	975	974	1,003	1,003
Weight ERAH basic (6)	kg	632	637	760	790	797	n.a.	1,019	n.a.	1,047	n.a.

1. Data refer to nominal conditions: water temperature 12/7 °C, external temperature 35 °C, glycol 0%, R410A refrigerant, fouling factor 0.0 m² °C/W
2. Data refer to total absorbed power (compressors and fans)
3. Data refer to nominal conditions: water temperature 40/45 °C, external temperature 7 °C dry bulb, 6 °C wet bulb, R410A refrigerant, fouling factor 0.0 m² °C/W
4. Data measured in free field at 10 meters from the unit operating without pump at nominal conditions, with fans at nominal conditions, coil side, Q=2 directional factor. At different conditions, with different configurations and/or with EC fans, noise values may vary.
5. Data refer to empty unit

Construction options

- Ultra-low noise version via a specific algorithm and soundproofing of the compressors.
- Partial/total condensation heat recovery.
- Integrated hydraulic module with one or two pumps (1 + 1 standby) with heat-protected circulation, expansion vessel, and safety valve.
- Internal water tank.
- Internal water tank including a pump to manage the primary circuit.
- Power factor improvement compressors.
- Compressor soft start.
- Cataphoresis treatment for the condensing coils.
- Shut-off taps on the compressor discharge.
- Evaporator, water tank, and pump group antifreeze heaters.
- Modification of the set point by external 0 V – 10 V signal.
- Condensing unit*.

Options

- Remote user terminal.
- Electronic expansion valve directly controlled by the unit microprocessor control.
- Clock card.
- RS485 serial card, FTT-10, or TCP/IP for connection to the Uniflair supervision system or an external BMS.
- Metal filters and protection grilles for the condensing coils.
- Rubber or spring anti-vibration supports.

* On request.

Uniflair ISAC/ISAH



Range

Cooling capacity: 60 ÷ 120 kW

Heating capacity: 66 ÷ 130 kW

Available versions

- Low noise

Refrigerant R410A

Inverter-driven scroll compressors

Standard features

- Self-supporting galvanized sheet steel framework with panels painted with epoxy powder paints (color RAL 9022) equipped with fast screws for easy and quick access.
- Inverter-driven hermetic scroll compressor, equipped with:
 - Inverter speed control
 - Oil bypass valve and line
 - Soft start
 - Integrated power factor correction condenser
 - Integrated thermal protection
 - Anti-vibration supports
- Inverter driver with IP54 protection grade coupled with a specific compressor and positioned in a dedicated housing compartment.
- Hermetic scroll compressor with integrated thermal protection and anti-vibration feet.
- Compressor soundproofing with noise insulating jackets and, only for model 1221A, soundproofing of the compressor compartment.
- Vibration absorbers on the compressor discharge and suction line (only for model 1221A).
- Single refrigerant circuit in accordance with EC standards (Directive PED 97/23/CE) in copper piping including dehydration filter, liquid sight glass, electronic expansion valve connected to and driven by the unit control, high and low pressure switches and transducers. The refrigerant circuit features an exclusive patented system for optimum lubrication management of the tandem compressors.
- Continuous operation up to -20 °C (only ISAC).
- Environmentally friendly refrigerant R410A.
- Crankcase heaters and inverter with oil-heating function.
- Brazed plate water side heat exchangers in stainless steel, insulated with closed cell expanded polyurethane and antifreeze heaters.
- Refrigerant side cycle inversion with four-way inversion valve (only ISAH).
- Water flow differential pressure switch.
- Air side exchange coil with aluminum fins and mechanically expanded copper piping.
- Acousti-Composite fans: sickle-blade axial fans, statically balanced and made from composite material ensuring elevated efficiency and low noise, with external and internal protection grille.
- Modulating condensation control by means of continuous fan speed control.
- Electrical panel in accordance with EC standards (Directive 73/23/EC and Directive EMC 89/336/EC). IP54 protection grade with auxiliary transformer, minimum and maximum temperature control, general door interlock cut-off switch, protection and remote control switches.
- Phase sequence control.
- UPC1m microprocessor control including:
 - Chilled/hot water temperature regulation by means of self-adaption of the set-point regulation band
 - Management of the electronic thermostatic valve
 - Compressor management driven by inverter
 - Quick start start-up procedure
 - Integrated LAN card
 - Integrated clock card
 - Compatibility with Modbus protocol via RS485
 - Compatability with the most common external BMS: LonWorks, BACnet, TCP/IP, Trend

Technical Data				
ISAC/ISAH Models		0621A	0921A	1221A
Power supply	V/ph/Hz	400/3 + N/50		
Refrigerant circuits	nr.	1	1	1
Compressors	nr.	1 ON-OFF + 1 inverter-driven (scroll)		
Fans	nr.	2	3	4
Evaporator	nr.	1	1	1
Evaporator	mod.	Plate		
ISAC — Low Noise Version				
Cooling capacity (1)	kW	57	84	111
Absorbed power (1)(2)	kW	18.7	26.8	36.1
ESEER (4)		5.66	5.71	5.72
ISAH — Low Noise Version				
Heating capacity (3)	kW	61	90	119
Absorbed power (3)(2)	kW	18.1	26.2	35.9
Dimensions and Weights				
Height	mm	1,560	1,560	1,874
Length	mm	1,190	1,190	1,192
Width	mm	2,008	2,798	3,075
Weight ISAC (basic version) (5)	kg	652	810	1,047
Weight ISAH (basic version) (5)	kg	682	840	1,092

1. Data refer to nominal conditions: inlet/outlet water temperature 12/7 °C, external temperature 35 °C, glycol 0%, inverter compressor at 90 RPS, R410A refrigerant, fouling factor 0.0 m² °C/W

2. Data refer to total absorbed power (compressors and fans)

3. Data refer to nominal conditions: water temperature 40/45 °C, external temperature dry bulb 7 °C, wet bulb 6 °C, inverter compressor at 90 RPS, R410A refrigerant, fouling factor 0.0 m² °C/W

4. European seasonal energy efficiency ratio

5. Data refer to empty unit

Construction options

- Integrated hydraulic module with one or two pumps (1+1 in standby) with heat-protected circulation, expansion vessel and safety valve.
- Integrated hydraulic module with one or two inverter-driven pumps (1+1 in standby) with heat-protected circulation, expansion vessel, and safety valve.
- Cataphoresis treatment for condensing coils.
- Shut-off taps on the compressor discharge.
- Power factor correction on compressors.
- Modification of the set point by external signal 0 V – 10 V.
- EC fans.

Options

- Remote user terminal mP20 II (up to 200 meters) for:
 - Entering of commands
 - Display unit status and alarms
- RS485 serial adaptor used to communicate with external BMS.
- LON FTT-10 serial adaptor used to communicate with external BMS managed with LON protocol.
- TCP/IP serial adaptor used to communicate with external BMS managed with SNMP protocol.
- Air side coil protection filters and grilles.
- Rubber or spring anti-vibration supports.

Uniflair TRAC/TRAH



Range

Cooling capacity: 115 ÷ 350 kW

Heating capacity: 129 ÷ 370 kW

Available versions

- Basic
- UltraQuiet

Refrigerant R410A

Scroll Compressors

Standard features

- Self-supporting frame in galvanized steel with panels finished in epoxy powders (colour RAL9022).
- Access panel to the unit equipped with handles and fast screws.
- Between two to four hermetic scroll compressors with internal thermal protection, discharge gas thermal protection, phase sequence control, safety internal valve, non return discharge valve, oil level glass, anti-vibration supports and crankcase heaters.
- Single (models 1221A and 1421A) or double refrigerant circuit conforming to EC standards (PED 97/23/ CE) with copper tubing including: filter dryer, liquid sight glass, expansion valve, discharge and suction taps on the compressor, pressure switches, high and low pressure transducers and gauges.
- Environmentally friendly refrigerant R410A.
- Water side brazed plate heat exchanger in stainless steel insulated with closed cell expanded polyurethane.
- Water flow differential pressure switch.
- Air side exchange coils with aluminium fins and mechanically-expanded copper tubes.
- Electrical heaters for air-side heat exchanger protection in heat pump mode (only for TRAH).
- Sickle-blade axial fans with electronically commutated motor, statically and dynamically balanced, made from composite materials for high efficiency and low acoustic impact, with safety protection grilles.
- Modulating condensation control with fan speed regulation.
- Electric panel conforming to EC standards (2006/95/ EC and EMC 2004/108/EC directives) with maximum internal temperature control, auxiliary transformer, general auxiliary cut-off switch, magneto-thermal protection switches with trip alarm signal on compressors, fuses for fan speed control protection, safemotor for pumps protection and remote control cut-off switches. Electrical board equipped with control and 230V power supply for external motorized isolating valve (8Amps max).
- Anti-condensation heaters for the electrical panel*.
- Phase sequence control and phase presence monitoring, minimum / maximum voltage protection and correct phase balancing.
- Microprocessor control system including:
 - local human interface with external display and accessible via an access hatch
 - outlet chilled water / hot water (for TRAH) temperature regulation by means of an exclusive PID algorithm
 - Production of chilled water to -10 °C
 - External motorized isolating valve management
 - Anti-freeze protection
 - Compressor timing and protection
 - Magneto-thermal protection switches with trip alarm signal on compressors
 - Compressor rotation based on FIFO logic
 - Pump rotation (if present) on a timed basis for equal operation and start-up of the stand-by pump (with alarm signal) in the event of a breakdown
 - Integrated LAN card for connecting more than one unit to the local area network
 - Integrated USB connection for data downloading
 - Integrated RS485 serial card data downloading
 - Main electrical data acquisition and management
 - Clock card.
- Microprocessor control system including:
 - Management of double set-point from remote control
 - Free-contact for general alarm and 2 for addressable alarms
 - Remote ON-OFF switch
 - Ability to interface with two separate BMSs with different protocols
 - Direct connection to serial BMSs with Modbus protocols (integrated RS485 serial card)
 - Set-point variation based on external temperature or signal (0-10V, 4-20mA or 0-20mA).

* Standard only for TRAH.

Technical Data										
TRAC/TRAH Models		1221A	1421A	1742A	2042A	2342A	2642A	2942A	3642A	4042A
Power supply	V/ph/Hz	400/3/50								
Compressors/Circuits	nr.	1/2	1/2	2/4	2/4	2/4	2/4	2/4	2/4	2/4
Evaporator type	nr. x mod.	1 x Plate								
Fans	nr.	2	2	3	3	4	4	5	5	6
TRAC										
Cooling capacity (1a) / (1b)	kW	115/118	127/132	157/161	183/188	215/220	236/243	262/269	302/312	345/355
Absorbed power (1a) / (1b)	kW	42,6/41,8	46,6/45,5	56,1/55,6	66/64,5	72,3/71,5	81,7/80,2	91,4/90,4	103,5/101,6	117,3/115,5
EER (2a) / (2b)		2,70/2,83	2,73/2,91	2,80/2,90	2,78/2,92	2,98/3,08	2,89/3,03	2,87/2,98	2,92/3,08	2,95/3,08
ESEER (3a) / (3b)		4,30/4,49	4,18/4,59	4,08/4,19	4,27/4,31	4,31/4,42	4,29/4,40	4,23/4,33	4,36/4,46	4,24/4,41
IPLV (4a) / (4b)		4,75/4,80	4,83/4,89	4,68/4,74	4,79/4,86	4,84/4,92	4,83/4,91	4,83/4,90	4,95/5,03	4,93/5,01
TRAH										
Heating capacity (5a) / (5b)	kW	120/122	134/137	171/175	193/198	227/233	246/253	275/281	322/330	362/372
Absorbed power (5a) / (5b)	kW	43,0/40,3	54,3/43,7	62,6/55,4	72,3/63,7	79,2/73,9	87,0/80,7	97,7/88,8	110,0/99,7	122,3/119,7
C.O.P. (2a) / (2b)		2,80/3,03	2,47/3,14	2,74/3,16	2,67/3,11	2,83/3,16	2,83/3,14	2,82/3,17	2,93/3,31	8,42/3,31
TRAC - UltraQuite version										
Cooling capacity (1a) / (1b)	kW	109/111	121/123	151/153	174/177	207/209	225/228	252/255	288/292	329/333
Absorbed power (1a) / (1b)	kW	44,5/43,7	49,3/48,3	58,1/57,2	69,3/67,8	74,8/73,5	85,5/83,7	94,6/93,0	108,6/106,4	122,3/119,7
EER (2a) / (2b)		2,45/2,55	2,46/2,55	2,60/2,68	2,52/2,62	2,77/2,85	2,64/2,73	2,67/2,75	2,66/2,75	2,70/2,79
ESEER (5a) / (5b)		4,02/4,25	4,07/4,3	4,00/4,12	4,14/4,26	4,24/4,35	4,20/4,31	4,13/4,25	4,28/4,40	4,21/4,32
IPLV (6a) / (6b)		4,64/4,73	4,70/4,8	4,65/4,74	4,74/4,83	4,82/4,90	4,78/4,87	4,80/4,9	4,90/4,99	4,87/4,98
TRAH - UltraQuite version										
Heating capacity (5a) / (5b)	kW	120 / 122	134 / 137	171 / 175	193 / 198	227 / 233	246 / 253	275 / 281	322 / 330	362 / 372
Absorbed power (5a) / (5b)	kW	43,0/40,3	54,3/43,7	62,6/55,4	72,3/63,7	79,2/73,9	87,0/80,7	97,7/88,8	110,0/99,7	122,3/119,7
C.O.P. (2a) / (2b)		2,80/3,03	2,47/3,14	2,74/3,16	2,67/3,11	2,87/3,16	2,83/3,14	2,82/3,17	2,93/3,31	8,42/3,31
Noise pressure level (6)										
Basic version	dB(A)	53,3	53,4	56,8	56,8	57,5	57,6	56,8	59,0	59,0
UltraQuiet version	dB(A)	50,7	50,8	54,3	54,3	54,8	54,9	54,3	56,4	56,4
Dimensions										
Height	mm	2215	2215	2215	2215	2215	2215	2135	2135	2135
Depth	mm	3162	3162	4612	4612	5562	5562	5730	5730	5730
Width	mm	1151	1151	1151	1151	1151	1151	2204	2204	2204

1. Data refer to nominal conditions: water temperature 12/7 °C, external temperature 35 °C, R410A refrigerant, fouling factor 0.0 m² °C/W
(a) AC fans (b) EC fans
2. Data refer to total absorbed power (compressors and fans)
(a) AC fans (b) EC fans
3. European seasonal energy efficiency ratio
(a) AC fans (b) EC fans
4. Integrated Partial Load Value
(a) AC fans (b) EC fans
5. Data refer to nominal conditions: water temperature 40/45 °C, external temperature 7 °C dry bulb, 6°C wet bulb, R410A refrigerant, fouling factor 0.0 m² °C/W
(a) AC fans (b) EC fans
6. Data measured in free field at 10 meters from the unit operating without pump at nominal conditions, with fans at nominal conditions, coil side, Q=2 directional factor. At different conditions, with different configurations and/or with EC fans, noise values may vary.

Construction options

- Double power supply with automatic integrated management on the active line and integrated condenser for control board.
- Separate power supply 230/3/50Hz.
- Double power supply with automatic integrated management on the active line and additional separate power supply 230/3/50Hz.
- Acoustic-Composite fans with electronic commutated motors (EC).
- Low external temperature option: TRAC unit can operate down to -20 °C external temperature.
- Integrated hydronic system with one or two circulation pumps.
- Integrated hydronic system with one or two inverterdriven circulation pumps and pressure transducers.
- Internal water tank.
- Internal water tank including a pump to manage the primary circuit.
- Antifreeze protection on evaporator and pump/s group.
- Refrigerant leak monitoring system that generates

alarms in the event of leakages in the compressor housing.

- Power meter for a continuous measurement of the unit power consumption and communication to the BMS.

Options

The units can be supplied with the following external accessories.

- Remote human interface PDG (up to 200 meters with shielded cable) for:
 - Entering of commands
 - Display unit status of alarms
- Spring anti-vibration kit.
- Flanged type hydraulic connection.
- Additional RS485 serial adaptor used to communicate with external BMS.
- LON FTT-10 serial adaptor used to communicate with external BMS managed with LON protocol.
- TCP/IP serial adaptor used to communicate with external BMS managed with SNMP protocol.
- Lifting kit.

Uniflair BREC



Range

Cooling capacity: 400 ÷ 1,100 kW

Available versions

- Low noise
- Ultra-low noise

Refrigerant R134a

Double screw compressors

Standard features

- Self-supporting frame in galvanized steel with panels finished in epoxy powders (color RAL9022).
- Two semi-hermetic double screw compressors with internal thermal protection, discharge shut-off valve, oil heaters, and anti-vibration supports.
- Two refrigerant circuits conforming to EC norms (PED 97/23/EC) in copper tubes including: filter dryer, flow indicator, electronic expansion valve managed by the Uniflair control system, valve on the liquid line, pressure switches, transducers, and manometers of high and low pressure.
- High efficiency shell and tube single passage evaporator. The heat exchanger is insulated with UV resistant closed cell expanded neoprene.
- Air side exchange coils with aluminum fins and internally grooved copper tubes.
- Water flow differential pressure switch.
- Acousti-Composite fans: sickle-blade axial fans, statically and dynamically balanced, made from composite materials for high efficiency and low acoustic impact, with safety protection grilles.
- Modulating condensation control with fan speed regulation.
- Electrical panel conforming to EC Norms (Directive 2006/95/EC and EMC 2004/108/EC, IP54) with general cut-off switch, electric bars distribution for power supply, acquisition of absorbed current, maximum internal temperature control, magneto-thermal cut-off switch on the fans and auxiliaries, fuses for the compressors.
- Sequence phase, minimum and maximum power supply monitoring.
- Microprocessor control system UPC1m including:
 - Local user terminal with external accessibility
 - Outlet chilled water temperature regulation by means of an exclusive PID algorithm
 - Electronic expansion valve managed by the control system
 - Advanced control of cooling capacity by automatic set-point sensitivity regulation
 - Refrigerant charge monitoring
 - Monitoring of the absorbed current and checking of possible malfunctions
 - Advanced antifreeze protection on evaporator
 - Integrated LAN card for local network connection of a group of chillers
 - Integrated clock card
 - Rotation of pump group setting functioning and start of pump in standby in the event of pump breakdown
- Microprocessor control system, in addition, allows:
 - Management of double set point from remote control
 - Limiting of absorbed current on preset value or external signal
 - Rapid quick start procedure to reach total cooling capacity within three minutes
 - Free contact for general alarm 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, and SNMP

Technical Data									
BREC Model		1802A	2202A	2502A	2802A	3212A	3612A	4212A	4812A
Power supply	V/ph/Hz	400/3/50							
Compressors/circuits	nr. x mod.	2 x double screw							
Evaporator	nr. x mod.	1 x shell and tube							
Fans	nr.	6	8	8	8	10	10	12	12
Unit without Economizer									
Cooling capacity (1)	kW	448	503	534	635	704	819	920	1,039
Absorbed power (1)(2)	kW	141.9	158.3	171.0	206.4	226.6	265.9	290.1	329.9
EER (1)(2)		3.16	3.18	3.12	3.08	3.11	3.08	3.17	3.15
ESEER (5)		4.20	4.15	4.17	4.25	4.44	4.72	4.33	4.59
IPLV (6)		4.78	4.73	4.77	4.89	5.15	5.45	4.95	5.30
Unit with Economizer									
Cooling capacity (3)	kW	486	549	582	709	776	891	1,005	1,126
Absorbed power (2)(3)	kW	157.4	180.5	190.5	248.9	264.7	302.6	333.3	377.2
EER (3)(2)		3.09	3.04	3.06	2.85	2.93	2.94	3.02	2.99
ESEER (5)		4.27	4.24	4.22	4.34	4.55	4.67	4.36	4.54
IPLV (6)		4.86	4.80	4.84	4.95	5.15	5.49	5.00	5.35
Noise Pressure Levels									
Low noise version (4)		61.1	61.2	60.1	60.9	62.4	62.6	63.1	63.6
Ultra-low noise version (4)		55.2	55.6	54.8	55.0	57.5	57.6	58.0	58.4
Dimensions									
Height	mm	2,525	2,525	2,525	2,525	2,525	2,525	2,525	2,525
Length	mm	4,931	6,357	6,357	6,357	8,890	8,890	10,320	10,320
Width	mm	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200

1. Data refer to nominal conditions: water temperature 12/7 °C, external temperature 35 °C, glycol 0%, refrigerant R134a, fouling factor 0.0 m² °C/W
2. Data refer to total absorbed power (compressors and fans)
3. Data refer to unit equipped with economizer at nominal conditions: water temperature 12/7 °C, external temperature 35 °C, glycol 0%, refrigerant R134a, fouling factor 0.0 m² °C/W
4. Data measured in free field at 10 meters from the unit operating without pump at nominal conditions, with fans at nominal conditions, coil side, Q=2 directional factor. At different conditions, with different configurations and/or with EC fans, noise values may vary.
5. European seasonal energy efficiency ratio
6. Integrated partial load value

Construction options

- Double power supply with automatic integrated management on the active line.
- Fans with electronic commutated motors (EC).
- Power phase correction capacitors.
- Economizer (increase in both capacity and EER).
- Operation possible with external temperature up to 50 °C at full load.
- Low external temperature: unit works down to -20 °C
- Ultra-low noise version with soundproof casing and mufflers for the compressors.
- Production of glycol/water mixture at low temperatures (down to -10 °C).
- Partial condensation heat recovery.
- Suction shut-off valves on compressor.
- Integrated hydronic system with one or two circulation pumps (1 + 1 standby).
- Integrated hydronic system with one or two inveter-driven circulation pumps (1+1 standby)*.
- Antifreeze protection on evaporator and pump group.
- Condensing coils equipped with metal safety grilles and filters.
- Coil manifolds protection panels.
- Condensing coil cataphoresis or pre-painting treatment.*

* On request.

Options

The units can be supplied with the following external accessories:

- Remote user terminal mP20 II (up to 200 meters with shielded cable) for:
 - Entering of commands
 - Display unit status of alarms
- Spring anti-vibration kit.
- Flanged type hydraulic connection.
- RS485 serial adaptor used to communicate with external BMS.
- LON FTT-10 serial adaptor used to communicate with external BMS managed with LON protocol.
- TCP/IP serial adaptor used to communicate with external BMS managed with SNMP protocol.

Uniflair BCEC



Range

Cooling capacity: 300 ÷ 1,200 kW

Available versions

- Low noise

Refrigerant R134a

Oil-free centrifugal compressors
with magnetic bearings

Standard features

- Self-supporting frame in galvanized steel with panels finished in epoxy powders (color RAL9022).
- Between one to three oil-free centrifugal compressors with magnetic bearings equipped with:
 - Internal thermal protection
 - Protection and control of the rotation axis position
 - Brushless synchronized DC motor
 - Integrated control system
 - Speed control with inverter
 - Soft start start-up
 - Phase sequence control
 - Pre-rotation valve
 - Temperature and pressure sensors
 - Two centrifugal compression stages
 - Anti-vibration kit
- Soundproofing enclosures for compressor/s.
- Single refrigerant circuit conforming to EC standards (PED 97/23/CE) with copper tubing including: filter dryer, liquid sight glass, electronic expansion valve controlled by a level sensor, discharge and suction taps on the compressor, pressure switches, high and low pressure transducers, and gauges.
- Bypass line for vacuum start-up with high-pressure ratio.
- Flooded evaporator featuring an integrated demister to prevent the formation of droplets: the exchanger is insulated with closed cell expanded polyurethane.
- Air side exchange coil with aluminum fins and internally grooved copper tubes.
- Differential water pressure switch.
- Acoustic-Composite fans: sickle-blade axial fans, statically and dynamically balanced, made from composite materials for high efficiency and low acoustic impact, with safety protection grilles.
- Modulating condensation control with continuous regulation of the fans speed.
- Electric panel conforming to EC standards (2006/95/EC and EMC 2004/108/EC Directives) with EMC integrated filter for protection of the harmonics, maximum internal temperature control, absorbed current control, auxiliary transformer, general auxiliary cut-off switch, fuses on the compressors, and remote control cut-off switches.
- Line reactance for each compressor to stabilize the power supply.
- Phase sequence control and minimum/maximum power supply and voltage.
- Microprocessor control system including:
 - Continuous control of the cooling capacity by means of an inverter and IGV (inlet guide vane)
 - Local user terminal with external display
 - Outlet chilled water temperature regulation by means of an exclusive PID algorithm
 - Integrated LAN card for connecting more than one unit to the local area network
 - Acquisition and management of main electrical data
 - Clock card
- Microprocessor control system, in addition, allows:
 - USB card for easy download of the operating parameters
 - Management of double set point from remote control
 - Free contact for general alarm and two for addressable alarms
 - Remote ON-OFF switch
 - Integrated RS485 serial card for direct connection to external BMS
 - Direct interface with serial BMS with Modbus protocol
 - Interface with main BMS protocols, such as BACnet, LonWorks, Trend, Metasys, SNMP/TCP-IP, and KNX

Technical Data								
BCEC Model		0301A	0401A	0532A	0632A	0752A	0903A	1103A
Power supply	V/ph/Hz	400/3/50						
Compressor/s	nr. x mod.	1 x oil-free		2 x oil-free			3 x oil-free	
Cooling circuits	nr.	1						
Evaporator	nr. x mod.	1 x flooded						
Fans	nr. x mod.	6	6	8	10	12	14	16
Unit with Asynchronous Motor Fans (AC)								
Cooling capacity (1)	kW	294	381	530	598	750	878	1100
Absorbed power (1)(2)	kW	92.2	120.6	164.6	182.6	227.2	271.1	338.6
EER (1)(2)		3.18	3.16	3.22	3.27	3.30	3.24	3.25
ESEER (3)		5.03	4.92	5.17	5.07	5.37	5.39	5.62
IPLV (4)		5.92	5.88	5.84	5.58	6.31	6.16	6.56
Noise pressure level (5)	dB(A)	52.1	52.5	53.5	54.0	55.0	55.0	55.5
Max. ambient temperature	°C	42						
UNIT with Electronically Commuted Motor Fans (EC)								
Cooling capacity (1)	kW	300	390	530	620	750	900	1200
Absorbed power (1)(2)	kW	94.6	118.3	156.6	188.4	216.1	273.3	362.2
EER (1)(2)		3.17	3.30	3.38	3.29	3.47	3.29	3.31
ESEER (3)		5.09	4.99	5.27	5.24	5.51	5.52	5.68
IPLV (4)		6.08	5.95	5.91	5.84	6.38	6.34	6.61
Max. noise pressure level (5)	dB(A)	54.4	54.2	55.2	56.0	56.7	56.9	57.1
Max. ambient temperature	°C	45						
Dimensions								
Height	mm	2,510	2,510	2,510	2510	2,510	2,510	2,510
Length	mm	5,000	5,000	6,430	7,860	9,290	10,720	12,150
Depth	mm	2,200	2,200	2,200	2,200	2,200	2,200	2,200

1. Data refer to nominal conditions: water temperature 12/7 °C, external temperature 35 °C, glycol 0%, refrigerant R134a, fouling factor 0.0 m² °C/W
2. Data refer to total absorbed power (compressors and fans)
3. European seasonal energy efficiency ratio
4. Integrated partial load value
5. Data measured in free field at 10 meters from the unit operating without pump at nominal conditions, with fans at nominal conditions, coil side, Q=2 directional factor. At different conditions, with different configurations and/or with EC fans, noise values may vary.

Construction options

- Double power supply with automatic integrated management on the active line and integrated condenser for control.
- Separate power supply for quick start procedure.
- Double power supply with automatic integrated management on the active line and additional separate power supply for quick start procedure.
- Power meter for a continuous measurement of the unit power consumption and communication to the BMS.
- Acoustic-Composite fans with electronic commutated motors (EC).
- Low external temperature option: unit can operate down to -20 °C external temperature.
- Integrated hydronic system with one or two circulation pumps.
- Integrated hydronic system with one or two inverter-driven circulation pumps and pressure transducers (1 + 1 standby).
- Antifreeze protection on evaporator and pump/s group.
- Condensing coils equipped with metal safety grilles and filters.
- Coil manifolds protection panels.
- Condensing coil cataphoresis or pre-painting treatment*.

* On request.

Options

The units can be supplied with the following external accessories:

- Remote user terminal PDG (up to 200 meters with shielded cable) for:
 - Entering of commands
 - Display unit status of alarms
- Spring anti-vibration kit.
- Flanged type hydraulic connection.
- Additional RS485 serial adaptor used to communicate with external BMS.
- LON FTT-10 serial adaptor used to communicate with external BMS managed with LON protocol.
- TCP/IP serial adaptor used to communicate with external BMS managed with SNMP protocol.
- Lifting kit.

Uniflair ERAF



Range

Cooling capacity: 50 ÷ 120 kW

Available versions

- Low noise
- Ultra-low noise

Refrigerant R410A

Scroll compressors

Standard features

- Exclusive free-cooling system completely managed by the microprocessor control.
- Self-supporting frame in galvanized steel with panels varnished with epoxy powders (color RAL9022).
- Access panel to the unit equipped with handles and fast screws.
- Two hermetic scroll compressors with internal thermal protection, anti-vibration supports, and crankcase heaters.
- Single refrigerant circuit* conforming to EC Directives (PED 97/23/CE) in copper tubing including filter dryer, liquid sight glass, dual flow thermostatic valve with external equalization, high and low pressure switches, and high pressure transducers.
- Environmentally friendly R410A refrigerant.
- Water side brazed plate heat exchanger in stainless steel insulated with closed cell expanded polyurethane.
- Free-cooling air side exchange coil with aluminum fins and mechanically expanded copper tubes.
- Free-cooling pump driven by microprocessor control.
- Water flow differential pressure switch.
- Acousti-Composite fans: sickle-blade axial fans, statically and dynamically balanced and made from composite materials for high efficiency and low acoustic impact with internal and external safety protection grilles (motor with IP54 protection grade).
- Modulating condensation control based on the condensation pressure.
- Electrical panel conforming to EC Directives (2006/95/EC and EMC 2004/108/EC), protection grade IP54 with auxiliary transformer, lockable general cut-off switch, anti-condensation heaters, automatic magneto-thermal cut-off switches, and remote control.
- Sequence phase control.
- Evolved UpCO1m control for:
 - Discharge water temperature regulation
 - Management of the electronic thermostatic valve
 - Management of intelligent free-cooling
 - Monitoring of the refrigerant load
 - Self-adjustment of the set-point regulation
 - Integrated LAN card
 - Compatibility with Modbus protocol via RS485
 - Compatibility with the most common external BMS: LonWorks, BACnet, TCP/IP, Trend

** ERAF models with **22A suffix are available with two compressors on two circuits.*

Technical Data											
ERAF Model		0521A	0621A	0721A	0821A	0921A	0922A	1021A	1022A	1221A	1222A
Power supply	V/ph/Hz	400/3 + N/50									
Fans	nr.	2	2	2	3	3	3	3	3	4	4
Refrigerant circuits	nr.	1	1	1	1	1	2	1	2	1	2
Compressors	nr. x mod.	2 x scroll									
Evaporator	nr.	1	1	1	1	1	2	1	2	1	2
Evaporator	mod	Plate									
ERAF — Low Noise Version											
Cooling capacity (1)	kW	48	56	66	76	84	84	97	97	112	112
Absorbed power (1)(2)	kW	14,8	18,9	20,9	23,5	27,8	27,8	32	32	37,7	37,7
EER (1)(2)		3,24	2,96	3,16	3,23	3,02	3,02	3,03	3,03	2,97	2,97
Free-cooling capacity (3)(4)	kW	35	37	43	52	53	53	62	62	71	71
ERAF — Ultra Low Noise Version											
Cooling capacity (1)	kW	46	55	64	74	81	82	94	94	109	109
Absorbed power (1)(2)	kW	15,6	19,5	21,8	24,8	28,9	28,9	33,2	33,2	39,1	39,1
EER (1)(2)		2,95	2,82	2,94	2,98	2,80	2,84	2,83	2,83	2,79	2,79
Free-cooling capacity (3)	kW	35	36	43	51	53	53	62	62	71	71
Dimensions and Weights											
Height	mm	1,560	1,560	1,560	1,560	1,560	1,560	1,875	1,875	1,875	1,875
Depth	mm	1,190	1,190	1,190	1,190	1,190	1,190	1,190	1,190	1,190	1,190
Width	mm	2,010	2,010	2,805	2,805	2,805	2,805	3,075	3,075	3,075	3,075
Weight (basic version)(6)	kq	700	705	855	884	890	881	1,128	1,107	1,157	1,137

1. Data refer to nominal conditions: water temperature 10/15 °C, external temperature 35 °C, glycol 20%, R410A refrigerant, fouling factor 0.0 m² °C/W
2. Data refer to total absorbed power (compressors and fans)
3. Data refer to nominal conditions: inlet water temperature 15 °C, external temperature 5 °C, glycol 20%, fouling factor 0.0 m² °C/W
4. Data refer to the absorbed power of the fans and the free-cooling pump
5. Data measured in free field at 10 meters from the unit operating without pump at nominal conditions, with fans at nominal conditions, coil side, Q=2 directional factor. At different conditions, with different configurations and/or with EC fans, noise values may vary.
6. Data refer to empty unit

Construction options

- Ultra-low noise version via a specific algorithm and soundproofing of the compressors.
- Partial condensation heat recovery.
- Integrated hydraulic module with one or two pumps (1 + 1 standby) with heat-protected circulation, expansion vessel and safety valve.
- Internal water tank.
- Internal water tank including a pump to manage the primary circuit.
- Power factor improvement compressors.
- Compressor soft start.
- Cataphoresis treatment for the condensing coils.
- Shut-off taps on the compressor discharge.
- Evaporator, water tank, and pump group antifreeze heaters.
- Modification of the set point by external 0 V – 10 V signal.

Options

- Remote user terminal mP20 II (up to 200 meters) for:
 - Entering of commands
 - Display unit status and alarms
- Electronic expansion valve directly controlled by the unit microprocessor control.
- Clock card.
- RS485 serial card, FTT-10, or TCP/IP for connection to external BMS.
- Metal filters and protection grilles for the condensing coils.
- Rubber or spring anti-vibration supports.

Uniflair ISAF



Range

Cooling capacity: 60 ÷ 120 kW

Available versions

- Low noise

Refrigerant R410A

Inverter-driven scroll compressors

Standard features

- Exclusive free-cooling system completely managed by the control system.
- Self-supporting galvanized sheet steel framework with panels painted with epoxy powder paints (color RAL 9022) equipped with fast screws for easy and quick access.
- Inverter-driven hermetic scroll compressor, equipped with:
 - Inverter speed control
 - Oil bypass valve and line
 - Soft start
 - Integrated power factor correction condenser
 - Integrated thermal protection
 - Anti-vibration supports
- Inverter driver with IP54 protection grade coupled with a specific compressor and positioned in a dedicated housing compartment.
- Compressor soundproofing with noise insulating jackets and, only for model 1221A, soundproofing of the compressor compartment.
- Vibration absorbers on the compressor discharge and suction line (only for model 1221A).
- Single refrigerant circuit in accordance with EC standards (Directive PED 97/23/CE) in copper piping including dehydration filter, liquid sight glass, electronic expansion valve connected to and driven by the unit control, high and low pressure switches and transducers. The refrigerant circuit features an exclusive patented system for optimum lubrication management of the tandem compressors.
- Continuous operation up to -20 °C.
- Environmentally friendly refrigerant R410A.
- Crankcase heaters and inverter with oil-heating function.
- Brazed plate water side heat exchangers in stainless steel, insulated with closed cell expanded polyurethane and antifreeze heaters.
- Pump for free-cooling circuit.
- Water flow differential pressure switch.
- Air side exchange coil and free-cooling coil with aluminum fins and mechanically expanded copper piping.
- Acousti-Composite fans: sickle-blade axial fans, statically balanced and made from composite material ensuring elevated efficiency and low noise, with external and internal protection grille.
- Modulating condensation control by means of continuous fan speed control.
- Electrical panel in accordance with EC standards (Directive 73/23/EC and Directive EMC 89/336/EC) IP54 protection grade with auxiliary transformer, minimum and maximum temperature control, general door interlock cut-off switch, protection and remote control switches.
- Phase sequence control.
- UPC1m microprocessor control including:
 - Chilled/hot water temperature regulation by means of self-adaption of the set-point regulation band
 - Management of the electronic thermostatic valve
 - Compressor management driven by inverter
 - Quick start start-up procedure
 - Integrated LAN card
 - Integrated clock card
 - Compatibility with Modbus protocol via RS485
 - Compatibility with the most common external BMS: LonWorks, BACnet, TCP/IP, Trend

Technical Data				
ISAF Model		0621A	0921A	1221A
Power supply	V/ph/Hz	400/3 + N/50		
Fans	nr.	2	3	4
Refrigerant circuits	nr.	1	1	1
Compressors	nr.	1 ON-OFF + 1 inverter-driven (scroll)		
Evaporator	nr.	1	1	1
Evaporator	mod.	Plate		
ISAF — Low Noise Version				
Cooling capacity (1)	kW	61	90	119
Absorbed power (1)(2)	kW	20.1	28.6	38.5
EER (1)(2)		3.01	3.12	3.08
Free-cooling capacity (3)	kW	38	54	73
Noise pressure level (4)	dB(A)	43.5	44.3	54.7
Dimensions and Weights				
Height	mm	1,560	1,560	1,874
Length	mm	1,190	1,190	1,192
Width	mm	2,008	2,798	3,075
Weight (basic version) (5)	kg	751	935	1,212

1. Data refer to nominal conditions: water temperature: 15/10 °C, external temperature 35 °C, glycol 20%, inverter compressor at 90 RPS, R410A refrigerant, fouling factor 0.0 m² °C/W
2. Data refer to total absorbed power (compressors and fans)
3. Data refer to nominal conditions: inlet water temperature 15 °C, external temperature 5 °C, glycol 20%, inverter compressor at 90 RPS, fouling factor 0.0 m² °C/W
4. Data measured in free field at 10 meters from the unit operating without pump at nominal conditions, with fans at nominal conditions, coil side, Q=2 directional factor. At different conditions, with different configurations and/or with EC fans, noise values may vary.
5. Data refer to empty unit

Construction options

- Integrated hydraulic module with one or two pumps (1+1 in standby) with heat-protected circulation, expansion vessel, and safety valve.
- Integrated hydraulic module with one or two inverter-driven pumps (1+1 in standby) with heat-protected circulation, expansion vessel, and safety valve.
- Intelligent free-cooling (only with onboard pumps).
- Cataphoresis treatment for condensing and free-cooling coils.
- Shut-off taps on the compressor discharge.
- Power factor correction on compressors.
- Modification of the set point by external signal 0 V – 10 V.
- EC fans.

Options

- Remote user terminal mP20 II (up to 200 meters) for:
 - Entering of commands
 - Display unit status and alarms
- RS485 serial adaptor used to communicate with the Uniflair supervisory system or to interface with external BMS.
- LON FTT-10 serial adaptor used to communicate with external BMS managed with LON protocol.
- TCP/IP serial adaptor used to communicate with external BMS managed with SNMP protocol.
- Air side coil protection filters and grilles.
- Rubber or spring anti-vibration supports.

Uniflair TRAF



Range

Cooling capacity: 120 ÷ 370 kW

Available versions

- Basic
- UltraQuiet

Refrigerant R410A

Scroll compressors

Standard features

- Exclusive free-cooling system completely managed by the microprocessor control.
- Self-supporting frame in galvanized steel with panels finished in epoxy powders (colour RAL9022).
- Access panel to the unit equipped with handles and fast screws.
- Between two to four hermetic scroll compressors with internal thermal protection, discharge gas thermal protection, phase sequence control, safety internal valve, non return discharge valve, oil level glass, anti-vibration supports and crankcase heaters.
- Single (models 1221A and 1421A) or double refrigerant circuit conforming to EC standards (PED 97/23/CE) with copper tubing including: filter dryer, liquid sight glass, expansion valve, discharge and suction taps on the compressor, pressure switches, high and low pressure transducers and gauges.
- Environmentally friendly refrigerant R410A.
- Water side brazed plate heat exchanger in stainless steel insulated with closed cell expanded polyurethane.
- Water flow differential pressure switch.
- Air side exchange coils with aluminium fins and mechanically-expanded copper tubes.
- Free-cooling air coils with aluminium fins and mechanically-expanded copper tubes. The coils are equipped with isolating solenoid valve to maximize the mixed free-cooling operation.
- Free-cooling pump driven by microprocessor control.
- Sickle-blade axial fans with electronically commutated motor, statically and dynamically balanced, made from composite materials for high efficiency and low acoustic impact, with safety protection grilles.
- Modulating condensation control with fan speed regulation.
- Electric panel conforming to EC standards (2006/95/EC and EMC 2004/108/EC directives) with, maximum internal temperature control, auxiliary transformer, general auxiliary cut-off switch, magneto-thermal protection switches with trip alarm signal on compressors, fuses for fan speed control protection, safemotor for pumps protection and remote control cut-off switches. Moreover the electrical board is equipped with control and 230V power supply for external motorized isolating valve (8Amps max).
- Phase sequence control and phase presence monitoring, minimum / maximum voltage protection and correct phase balancing.
- Anti-condensation heaters for the electrical panel.
- Microprocessor control system including:
 - Local human interface with external display and accessible via an access hatch
 - Outlet chilled water temperature regulation by means of an exclusive PID algorithm
 - Free-cooling and intelligent free-cooling management
 - Mixed free-cooling operation
 - External motorized isolating valve management
 - Anti-freeze protection
 - Compressor timing and protection
 - Compressor rotation based on FIFO logic
 - Pump rotation (if present) on a timed basis for equal operation and start-up of the stand-by pump (with alarm signal) in the event of a breakdown
 - Integrated LAN card for connecting more than one unit to the local area network
 - Integrated USB connection for data downloading
 - Integrated RS485 serial card
 - Main electrical data acquisition and management
 - Clock card.
- Microprocessor control system in addition allows:
 - Management of double set-point from remote control
 - Free-contact for general alarm and 2 for addressable alarms
 - Remote ON-OFF switch
 - Ability to interface with two separate BMSs with different protocols
 - Direct connection to serial BMSs with Modbus protocols (integrated RS485 serial card)
 - Set-point variation based on external temperature or signal (0-10V, 4-20mA or 0-20mA).

Technical Data										
TRAF Models		1221A	1421A	1742A	2042A	2342A	2642A	2942A	3642A	4042A
Power supply	V/ph/Hz	400/3/50								
Compressors/Circuits	nr.	1/2	1/2	2/4	2/4	2/4	2/4	2/4	2/4	2/4
Evaporator type	nr. x mod.	1 x Plate								
Fans	nr.	2	2	3	3	4	4	5	5	6
TRAF										
Cooling capacity (1)	kW	122	136	167	194	226	248	276	318	356
Absorbed power (1)	kW	44,2	48,6	58,2	68,3	76,6	87	97,4	110,3	125,5
EER (2)		2,77	2,80	2,88	2,85	2,95	2,85	2,84	2,88	2,84
Free-cooling capacity (3)	kW	78	80	121	126	170	175	218	223	244
TRAF - UltraQuite version										
Cooling capacity (1)	kW	117	129	160	185	216	234	263	299	336
Absorbed power (1)	kW	46,6	51,8	60,5	72,2	80,5	92,7	102	117,8	133,9
EER (2)		2,51	2,49	2,66	2,56	2,69	2,53	2,58	2,54	2,51
Free-cooling capacity (3)	kW	68	69	105	108	144	147	184	186	203
TRAF - EC fans										
Cooling capacity (1)	kW	126	141	172	200	233	257	286	331	372
Absorbed power (1)	kW	43	46,9	57,1	66,2	74,9	84,2	95,1	106,6	121,8
EER (2)		2,94	3,01	3,02	3,03	3,12	3,05	3,01	3,11	3,06
Free-cooling capacity (3)	kW	86	89	134	140	191	198	245	254	279
TRAF - EC fans UltraQuiet version										
Cooling capacity (1)	kW	118	130	162	186	218	238	266	303	341
Absorbed power (1)	kW	45,8	50,9	59,5	70,9	78,7	90,6	99,9	114,9	130,2
EER (2)		2,57	2,56	2,72	2,63	2,77	2,63	2,67	2,64	2,63
Free-cooling capacity (3)	kW	68	69	105	108	144	147	184	186	203
Noise pressure level (4)										
Basic version	dB(A)	53,3	53,4	56,8	56,8	57,5	57,6	56,8	59,0	59,0
UltraQuiet version	dB(A)	50,7	50,8	54,3	54,3	54,8	54,9	54,3	56,4	56,4
Dimensions										
Height	mm	2215	2215	2215	2215	2215	2215	2135	2135	2135
Depth	mm	3162	3162	4612	4612	5562	5562	5730	5730	5730
Width	mm	1151	1151	1151	1151	1151	1151	2204	2204	2204

1. Data refer to nominal conditions: water temperature 10/15 °C, external temperature 35 °C, R410A refrigerant, fouling factor 0.0 m² °C/W, glycol 20%

2. Data refer to total absorbed power (compressors and fans)

3. Data refer to nominal conditions: inlet water temperature 15 °C, external temperature 5 °C, glycol 20%, fouling factor 0.0 m² °C/W

4. Data measured in free field at 10 meters from the unit operating without pump at nominal conditions, with fans at nominal conditions, coil side, Q=2 directional factor. At different conditions, with different configurations and/or with EC fans, noise values may vary.

Construction options

- Double power supply with automatic integrated management on the active line and integrated condenser for control board.
- Separate power supply 230/3/50Hz.
- Double power supply with automatic integrated management on the active line and additional separate power supply 230/3/50Hz.
- Acoustic-Composite fans with electronic commutated motors (EC).
- Intelligent free-cooling.
- Glycol-free arrangement
- Integrated hydronic system with one or two circulation pumps.
- Integrated hydronic system with one or two inverter-driven circulation pumps and pressure transducers (1 + 1 standby).
- Internal water tank.
- Antifreeze protection on evaporator and pump/s group.
- Refrigerant leak monitoring system that generates alarms in the event of leakages in the compressor housing.
- Power meter for a continuous measurement of the unit power consumption and communication to the BMS.

Options

The units can be supplied with the following external accessories:

- Remote human interface PDG (up to 200 meters with shielded cable) for:
 - Entering of commands
 - Display unit status of alarms
- Spring Anti-vibration kit.
- Flanged type hydraulic connection.
- Additional RS485 serial adaptor used to communicate with external BMS.
- LON FTT-10 serial adaptor used to communicate with external BMS managed with LON protocol.
- TCP/IP serial adaptor used to communicate with external BMS managed with SNMP protocol.
- Lifting kit.

Uniflair BREF



Range

Cooling capacity: 400 ÷ 1,200 kW

Available versions

- Low noise
- Ultra-low noise

Refrigerant R134a

Double screw compressors

Standard features

- Exclusive Uniflair free-cooling system completely managed by the microprocessor control.
- Self-supporting frame in galvanized steel with panels finished in epoxy powders (color RAL9022).
- Two semi-hermetic double screw compressors with internal thermal protection, discharge shut-off valve, oil heaters, and anti-vibration supports.
- Two refrigerant circuits conforming to EC norms (PED 97/23/EC) in copper tubes including: filter dryer, flow indicator, electronic expansion valve managed by the control system, electrovalve on the liquid line, pressure switches, transducers, and manometers of high and low pressure.
- Possibility of operation with external temperatures down to -25 °C.
- High efficiency shell and tube single passage evaporator. The heat exchanger is insulated with UV resistant closed cell expanded neoprene.
- Air side exchange coils with aluminum fins and internally grooved copper tubes.
- Water flow differential pressure switch.
- Acousti-Composite fans: sickle-blade axial fans, statically and dynamically balanced, made from composite materials for high efficiency and low acoustic impact with safety protection grilles.
- Modulating condensation control with fan speed regulation.
- Electrical panel conforming to EC norms (Directive 2006/95/EC and EMC 2004/108/EC, IP54) with general cut-off switch, power supply electric bars distribution, acquisition of absorbed current, minimum and maximum internal temperature control, magneto-thermal cut-off switch on the fans and auxiliaries, fuses for the compressors.
- Sequence phase, minimum and maximum power supply monitoring.
- Free-cooling pump regulated by microprocessor control.
- Microprocessor control system UPC1m including:
 - Local user terminal with external accessibility
 - Outlet chilled water temperature regulation by means of an exclusive PID algorithm
 - Electronic expansion valve managed by the control system
 - Advanced control of cooling capacity by automatic set-point sensitivity regulation
 - Refrigerant charge monitoring
 - Monitoring of the absorbed current and checking of possible malfunctions
 - Advanced antifreeze protection on evaporator
 - Integrated LAN card for local network connection of a group of chillers
 - Integrated clock card
 - Rotation of pump group setting functioning and start of pump in standby in the event of pump breakdown
- Microprocessor control system, in addition, allows:
 - Management of double set point from remote control
 - Limiting of absorbed current on preset value or external signal
 - Rapid quick start procedure to reach total cooling capacity within three minutes
 - Free contact for general alarm 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, and SNMP

Technical Data									
BREF Model		1802A	2202A	2502A	2802A	3212A	3612A	4212A	4812A
Power supply	V/ph/Hz	400/3/50							
Compressors/circuits	nr. x mod.	2 x double screw							
Evaporator	nr. x mod.	1 x shell and tube							
Fans	nr.	6	8	8	8	10	10	12	12
Unit without Economizer									
Cooling capacity (1)	kW	474	541	575	685	764	863	980	1099
Absorbed power (1)(2)	kW	151.8	167.1	181.2	220.5	240.2	285.1	311.6	361.5
EER (1)(2)		3.12	3.24	3.17	3.11	3.18	3.03	3.15	3.04
Free-cooling capacity (4)	kW	303	352	357	412	455	515	611	625
Unit with Economizer									
Cooling capacity (3)	kW	503	584	611	745	835	940	1065	1183
Absorbed power (2)(3)	kW	166.8	188.6	197.6	255.0	280.7	331.7	357.5	425.1
EER (2)(3)		3.02	3.10	3.09	2.92	2.97	2.83	2.98	2.78
Free-cooling capacity (4)	kW	303	352	357	412	455	515	611	625
Noise Pressure Levels									
Low noise version (5)	dB(A)	61.1	61.2	60.1	60.9	62.4	62.6	63.1	63.6
Ultra-low noise version (5)	dB(A)	55.2	55.6	54.8	55.0	57.5	57.6	58.0	58.4
Dimensions									
Height	mm	2,525	2,525	2,525	2,525	2,525	2,525	2,525	2,525
Length	mm	4,931	6,357	6,357	6,357	8,890	8,890	10,320	10,320
Width	mm	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200

1. Data refer to nominal conditions: water temperature 15/10 °C, external temperature 35 °C, glycol 20%, refrigerant R134a, fouling factor 0.0 m² °C/W

2. Data refer to total absorbed power (compressors and fans)

3. Data refer to unit equipped with economizer in nominal conditions: water temperature 15/10 °C, external temperature 35 °C, glycol 20%, refrigerant R134a, fouling factor 0.0 m² °C/W

4. Data measured in free field at 10 meters from the unit operating without pump at nominal conditions, with fans at nominal conditions, coil side, Q=2 directional factor. At different conditions, with different configurations and/or with EC fans, noise values may vary.

5. Measured in free field conditions 10 m from the unit, coil side (Q = 2)

Construction options

- Double power supply with automatic integrated management on the active line.
- Fans with electronic commutated motors (EC).
- Power phase correction capacitors.
- Economizer (permits an increase in both capacity and EER).
- Operation possible with external temperature up to 50 °C at full load.
- Ultra-low noise version with soundproof casing and mufflers for the compressors.
- Intelligent free-cooling for an increase in efficiency with unit in standby.
- Glycol-free version.
- Partial condensation heat recovery.
- Suction shut-off valves on compressor.
- Integrated hydronic system with one or two circulation pumps (1+1 standby).
- Integrated hydronic system with one or two inveter-driven circulation pumps (1+1 standby)*.
- Condensing and free-cooling coils equipped with metal safety grilles and filters.
- Coil manifolds protection panels.
- Condensing and free-cooling coil cataphoresis or pre-painting treatment*.

Options

The units can be supplied with the following external accessories:

- Remote user terminal mP20 II (up to 200 meters with shielded cable) for:
 - Entering of commands
 - Display unit status of alarms
- Spring anti-vibration kit.
- Flanged type hydraulic connection.
- RS485 serial adaptor used to communicate with external BMS.
- LON FTT-10 serial adaptor used to communicate with external BMS managed with LON protocol.
- TCP/IP serial adaptor used to communicate with external BMS managed with SNMP protocol.

* On request.

Uniflair BCEF



Range

Cooling capacity: 300 ÷ 1,200 kW

Available versions

- Low noise

Refrigerant R134a

Oil-free centrifugal compressors
with magnetic bearings

Standard features

- Exclusive Uniflair free-cooling system completely managed by the microprocessor control.
- Self-supporting frame in galvanized steel with panels finished in epoxy powders (color RAL9022).
- Between one to three oil-free centrifugal compressors with magnetic bearings equipped with:
 - Internal thermal protection
 - Protection and control of the rotation axis position
 - Brushless synchronized DC motor
 - Integrated control system
 - Speed control with inverter
 - Soft start start-up
 - Phase sequence control
 - Pre-rotation valve
 - Temperature and pressure sensors
 - Two centrifugal compression stages
 - Anti-vibration kit
- Soundproofing enclosures for compressor/s.
- Single refrigerant circuit conforming to EC standards (PED 97/23/CE) with copper tubing including: filter dryer, liquid sight glass, electronic expansion valve controlled by a level sensor, discharge and suction taps on the compressor, pressure switches, high and low pressure transducers, and gauges.
- Bypass line for vacuum start-up with high-pressure ratio.
- Flooded evaporator featuring an integrated demister to prevent the formation of droplets: the exchanger is insulated with closed cell expanded polyurethane.
- Differential water pressure switch.
- Air side exchange coil with aluminum fins and internally grooved copper tubes.
- Acoustic-Composite fans: sickle-blade axial fans, statically and dynamically balanced, made from composite materials for high efficiency and low acoustic impact, with safety protection grilles.
- Modulating condensation control with continuous regulation of the fans speed.
- Electric panel conforming to EC standards (2006/95/EC and EMC 2004/108/EC Directives) with EMC integrated filter for protection of the harmonics, maximum internal temperature control, absorbed current control auxiliary transformer, general auxiliary cut-off switch, fuses on the compressors, and remote control cut-off switches.
- Line reactance for each compressor to stabilize the power supply.
- Phase sequence control and minimum/maximum power supply and voltage.
- Free-cooling pump regulated by microprocessor control.
- Microprocessor control system including:
 - Continuous control of the cooling capacity by means of an inverter and IGV (inlet guide vane)
 - Local user terminal with external display
 - Outlet chilled water temperature regulation by means of an exclusive PID algorithm
 - Integrated LAN card for connecting more than one unit to the local area network
 - Acquisition and management of main electrical data
 - Clock card
- Microprocessor control system, in addition, allows:
 - USB card for easy download of the operating parameters
 - Management of double set point from remote control
 - Free contact for general alarm and two for addressable alarms
 - Remote ON-OFF switch
 - Integrated RS485 serial card for direct connection to external BMS
 - Direct interface with serial BMS with Modbus protocol
 - Interface with main BMS protocols, such as BACnet, LonWorks, Trend, Metasys, SNMP/TCP-IP, and KNX.

Technical Data								
BCEF Model		0301A	0401A	0532A	0632A	0752A	0903A	1103A
Power supply	V/ph/Hz	400/3/50						
Compressor/s	nr. x mod.	1 x oil-free		2 x oil-free			3 x oil-free	
Cooling circuits	nr.	1						
Evaporator	nr. x mod.	1 x flooded						
Fans	nr. x mod.	6	6	8	10	12	14	16
Unit with Asynchronous Motor Fans (AC)								
Cooling capacity (1)	kW	300	397	550	630	800	915	1,200
Absorbed power (2)	kW	88.8	121.3	261.8	183.2	236.2	268.7	366.2
EER (1)(2)		3.38	3.27	3.33	3.44	3.39	3.40	3.28
Free-cooling capacity (3)	kW	227	266	360	390	535	620	743
Noise pressure level (4)	dB(A)	52.1	52.5	53.5	54.0	55.0	55.0	55.5
Max. ambient temperature	°C	40						
Unit with Electronically Commutated Motor Fans (EC)								
Cooling capacity (1)	kW	300	415	550	650	800	950	1,300
Absorbed power (1)(2)	kW	138.1	185.2	152.9	184.2	338.6	267.3	368.4
EER (1)(2)		3.36	3.47	3.6	3.53	3.68	3.55	3.53
Free-cooling capacity (3)	kW	235	279	380	407	587	682	783
Max. noise pressure level (4)	dB(A)	54.4	54.2	55.2	56.0	56.7	56.9	57.1
Max. ambient temperature	°C	43						
Dimensions								
Height	mm	2,510	2,510	2,510	2,510	2,510	2,510	2,510
Length	mm	5,000	5,000	6,430	7,860	9,290	10,720	12,150
Depth	mm	2,200	2,200	2,200	2,200	2,200	2,200	2,200

1. Data refer to nominal conditions: water temperature 10/15 °C, external temperature 35 °C, glycol 20%, refrigerant R134a, fouling factor 0.0 m² °C/W
2. Data refer to total absorbed power (compressors and fans)
3. Data refer to nominal conditions: inlet water temperature 15 °C, external temperature 5 °C, glycol 20%, refrigerant R134a, fouling factor 0.0 m² °C/W
4. Data measured in free field at 10 meters from the unit operating without pump at nominal conditions, with fans at nominal conditions, coil side, Q=2 directional factor. At different conditions, with different configurations and/or with EC fans, noise values may vary.

Construction options

- Double power supply with automatic integrated management on the active line.
- Separate power supply for quick start procedure.
- Double power supply with automatic integrated management on the active line and additional separate power supply for quick start procedure.
- Power meter for a continuous measurement of the unit power consumption and communication to the BMS.
- Acoustic-Composite fans with electronic commutated motors (EC).
- Intelligent free-cooling.
- Glycol-free arrangement*.
- Integrated hydronic system with one or two circulation pumps (1 + 1 standby).
- Integrated hydronic system with one or two inverter-driven circulation pumps and pressure transducers (1 + 1 standby).
- Coils equipped with metal safety grilles and filters.
- Coil manifolds protection panels.
- Condensing coil cataphoresis or pre-painting treatment*.

* On request.

Options

The units can be supplied with the following external accessories:

- Remote user terminal PDG (up to 200 meters with shielded cable) for:
 - Entering of commands
 - Display unit status of alarms
- Spring anti-vibration kit.
- Flanged type hydraulic connection.
- Additional RS485 serial adaptor used to communicate with external BMS.
- LON FTT-10 serial adaptor used to communicate with LON protocol.
- TCP/IP serial adaptor used to communicate with external BMS managed with SNMP protocol.
- Lifting kit.

Uniflair BRWC/BRWH



Range

Cooling capacity: 300 ÷ 1,200 kW

Heating capacity: 370 ÷ 1,370 kW

Available versions

- Basic
- Sea water condensers*
- High condensing water temperature**

Refrigerant R134a

Double screw compressors

Standard features

- Self-supporting frame in galvanized steel with panels finished in epoxy powders (color RAL9022).
- Two semi-hermetic double screw compressors with internal thermal protection, oil heaters, and anti-vibration supports.
- Two refrigerant circuits conforming to EC standards (PED 97/23/CE) in copper tubing including: filter dryer, liquid sight glass, electronic expansion valve, discharge shut-off valve, pressure gauges, pressure switches, and high and low pressure transducers.
- Shell and tube evaporator insulated with closed cell expanded neoprene.
- Shell and tube condenser.
- Water flow differential pressure switch for the evaporator and condensers.
- Electric panel conforming to EC standards (2006/95/EC and EMC 2004/108/EC Directives) with maximum internal temperature control, auxiliary transformer, auxiliary general cut-off switch, fuses for compressors, cut-off switches.
- Phase sequence and minimum/maximum voltage control.
- UPC1m microprocessor control system including:
 - mP20II local user terminal visible externally and accessible through a door panel
 - Chilled water/hot discharge water temperature regulation
 - Advanced start-up management with eight partialization steps with automatic set-point regulation and compressor rotation with FIFO logic (runtime counter, inrush counter, and counter threshold for programmed maintenance)
 - Advanced evaporator antifreeze protection
 - Integrated LAN card for connection to the local network of a group of chillers (up to 10 units with one or two in reserve)
 - Modulating condensation control (with kit: see options)
 - Clock card
- The microprocessor control system also includes:
 - External evaporator pump group management
 - Set point adjustment from external 0 V – 10 V signal
 - Double set-point management with contact selection
 - General alarm contact and two addressable alarms
 - ON-OFF remote control
 - Ability to interface with Modbus protocol directly on RS485 serial card
 - Ability to interface with main external communication protocols: BACnet, LonWorks, Metasys, TCP/IP, and SNMP.

* On request.

** Available only for 1402A, 2002A, 2202A, 3202A, 3602A models.

Technical Data						
BRWC/BRWH Models		1802A	2202A	2802A	3202A	4202A
Power Supply	V/ph/Hz	400/3/50				
Compressors	nr. x mod.	2 x semi-hermetic double screw				
Evaporator	nr. x mod.	1 x shell and tube				
Condensers	nr. x mod.	2 x shell and tube				
Cooling Only (BRWC)						
Cooling capacity (1)	kW	430	544	712	830	1,077
Absorbed power (1)	kW	96.9	116.6	146.0	172.8	225.9
IPLV (3)		5.00	5.88	5.68	5.63	5.50
ESEER (4)		4.67	5.35	5.26	5.15	5.03
Heat Pump (BRWH)						
Heating capacity (2)	kW	494	627	806	938	1,216
Noise Levels						
Noise pressure level basic version (5)	dB(A)	73.8	79.5	79.6	77.3	76.3
Noise pressure level LN version (5)	dB(A)	64.6	69.6	72.4	69.3	71.8
Dimensions						
Height	mm	2,050	2,050	2,060	2,295	2,295
Length	mm	3,660	3,800	4,070	4,130	4,130
Depth	mm	860	860	860	1,485	1,485
Width with heat recovery	mm	1,680	1,680	1,755	1,660	1,660
Weight (6)	kg	2,930	3,707	3,818	5,360	5,638

1. Data refer to nominal conditions: evaporator in/ out water temperature: 12/7 °C, condenser in/ out water temperature: 30/35 °C, condenser fouling coefficient: 0.0 m² °C/W, evaporator fouling coefficient: 0.0 m² °C/W, R134a refrigerant
2. Data refer to nominal conditions: evaporator in/ out water temperature: 12/7 °C, condenser in/ out water temperature: 40/45 °C, condenser fouling coefficient: 0.0 m² °C/W, evaporator fouling coefficient: 0.0 m² °C/W, R134a refrigerant
3. Integrated partial load value: based on ARI conditions
4. European seasonal energy efficiency ratio
5. Measured in free field with Q=2 directionality factor, at a distance of 1 m from the unit
6. Data refer to empty unit

Construction options

- Low noise version with soundproofed housing for the compressors.
- Low external temperature version with anti-condensation heater for the electrical panel and heaters for the evaporator and condensers.
- Condensers for sea water*.
- High condensation temperature version**.
- Partial/total integrated condensation heat recovery.
- Low temperature glycol/water mixture production (down to -10 °C).
- RS485 serial card for connection an external BMS.
- LON FFT-10 serial card for connection to an external BMS with LON protocol.
- Power phase correction condensers.
- Unit predisposed for outdoor installation*.

* On request.

** Available only for 1402A, 2002A, 2202A, 3202A, 3602A models.

Options

- Pressostatic valve with integrated control for control software.
- Remote control panel which allows:
 - Display/modification of settings
 - Display of activated alarms
- Spring anti-vibration anti-seismic supports.
- Neoprene anti-vibration supports.

Uniflair BCWC



Range

Cooling capacity: 300 ÷ 1,300 kW

Available versions

- Basic
- Sea water condensers*

Refrigerant R134a

Oil-free centrifugal compressors
with magnetic bearings

Standard features

- Self-supporting metal frame in galvanized steel varnished in epoxy powders (color RAL9022).
- Between one and four oil-free centrifugal compressors with magnetic bearings equipped with:
 - Internal thermal protection
 - Protection and control of the rotation axis position
 - Brushless synchronized DC motor
 - Integrated control system
 - Speed control with inverter
 - Soft start start-up
 - Phase sequence control
 - Pre-rotation valve
 - Temperature and pressure sensors
 - Two centrifugal compressor stages
 - Anti-vibration supports
- Single refrigerant circuit conforming to EC standards (PED 97/23/CE Directive) with copper tubing including: filter dryer, liquid sight glass, electronic expansion valve controlled by a level sensor, discharge and suction taps on the compressor, pressure switches, high and low pressure transducers, and gauges.
- Bypass line for vacuum start-up with high pressure ratio.
- Shell and tube evaporator featuring an integrated demister to prevent the formation of droplets: the exchanger is insulated with closed cell expanded polyurethane.
- Differential water pressure switch for the evaporator and the condenser.
- Shell and tube condenser.
- Electric panel conforming to EC standards. (2006/95 /EC and EMC 2004/108/EC Directives) with EMC integrated filter for protection of the harmonics, maximum internal temperature control, auxiliary transformer, general auxiliary cut-off switch, fuses on the compressors, and remote control cut-off switches.
- Line reactance for each compressor to stabilize the power supply.
- Phase sequence control and minimum/maximum power supply and voltage.
- UPC3m microprocessor control system including:
 - Continuous control of the cooling capacity by means of an inverter and IGV (inlet guide vane)
 - PGD local user terminal with external display
 - Outlet water temperature regulation
 - Integrated LAN card for connecting more than one unit to the local area network
 - Clock card
- The control system also features:
 - External pump group management for the evaporator
 - Set-point modification by an external 0 V – 10 V signal
 - Management of a double set point with contact selection
 - General alarm contact and two addressable alarms
 - Remote ON-OFF control
 - Ability to interface with Modbus protocol directly on RS485 serial card
 - Ability to interface with main external communication protocols: BACnet, LonWorks, Metasys, TCP/IP, and SNMP

* On request.

Technical Data					
BCWC Model		0320A	0630A	0950A	1250A
Power supply	V/ph/Hz	400/3/50			
Compressors	nr. x mod.	1 x centrifugal	2 x centrifugal	3 x centrifugal	4 x centrifugal
Evaporator	nr. x mod.	1 x flooded			
Condensers	nr. x mod.	1 x shell and tube			
Cooling Only					
Cooling capacity (1)	kW	320	630	950	1,250
Absorbed power (1)	kW	67.5	133.8	198.0	258.3
EER (1)	kW	4.74	4.71	4.80	4.84
Noise Levels					
Noise pressure level (2)	dB(A)	67.3	70.3	72.1	73.3
Dimensions and Weight					
Height	mm	2,028	2,130	1,924	1,924
Length	mm	2,640	2,940	3,294	4,591
Width	mm	1,061	1,022	1,544	1,505
Weight (3)	kg	1,585	2,814	3,752	5,760

1. Data refers to nominal conditions: in/out evaporator water temperature: 12/7 °C, in/out condenser water temperature: 30/35 °C, fouling factor: 0.0 m² °C/W, R134a refrigerant

2. Measured in free field with Q=2 directional factor, at a distance of 1 m from the unit

3. Data refer to empty unit

Construction options

- Condenser for sea water use*.
- RS485 serial card for connection to Uniflair supervision system or an external BMS.
- LON FFT-10 serial card for connection to an external BMS with LON protocol.

* On request.

Options

- Remote control panel which enables:
 - The settings to be displayed/changed
 - Alarm status to be displayed
- Neoprene anti-vibration supports.

Uniflair ERCC/ERCH



Range

Cooling capacity: 50 ÷ 120 kW

Available versions

- Low noise
- Ultra-low noise

Refrigerant R410A

Scroll compressors

Standard features

- Self-supporting frame in galvanized steel with panels varnished with epoxy powders (color RAL9022).
- Access panel to the unit equipped with handles and fast screws.
- Two hermetic scroll compressors with internal thermal protection, anti-vibration supports, and crankcase heaters (ERCH and low ambient temperature versions).
- Single refrigerant circuit* conforming to EC Directives (PED 97/23/CE) in copper tubing including filter dryer, liquid sight glass, dual flow thermostatic valve with external equalization, high and low pressure switches, and high pressure transducers.
- Environmentally friendly R410A refrigerant.
- Water side brazed plate heat exchanger in stainless steel insulated with closed cell expanded polyurethane.
- Water flow differential pressure switch.
- Free-cooling air side exchange coil with aluminum fins and mechanically expanded copper tubes.
- Refrigerant side cycle inversion with four-way inversion valve (ERCH).
- Single suction backward curved blade centrifugal fans. The external tri-phase rotary electric motor is directly coupled and has an IP54 Class F equipped with internal thermal protection (Klixon). The fan impeller is dynamically and statically balanced and the cushions are sealed and lubricated for life.
- Modulating condensation control based on the condensation pressure.
- Electrical panel conforming to EC Directives (2006/95/EC and EMC 2004/108/EC) protection grade IP54 with auxiliary transformer, lockable general cut-off switch, magneto-thermal cut-off switches, and remote control.
- Sequence phase control.
- Anti-condensation heaters for the electrical panel (ERCH and low ambient temperature versions).
- Microprocessor control system including:
 - Local user terminal
 - Chilled/hot water temperature regulation (ERCH)
 - Production of chilled water to -15 °C
 - Antifreeze protection
 - Compressor timing and protection
 - Compressor rotation based on FIFO logic
 - Pump rotation on a timed basis for equal operation and start-up of the standby pump (with alarm signal) in the event of a breakdown
 - Display of compressor operating hours
 - Alarm code signal
 - General alarm with clean signal contact
 - ON-OFF remote contact

Top level options

- Electronic expansion valve directly controlled by the unit microprocessor control
- Single suction backward curved fans with electronically commutated motor (EC)
- Evolved UpCO1m control for:
 - Discharge water temperature regulation
 - Management of the electronic thermostatic valve
 - Monitoring of the refrigerant load
 - Self-adjustment of the set-point regulation
 - Evolved defrost operation management (ERCH)
 - Integrated LAN card
 - Compatibility with the most common external BMS and with the Modbus protocol using only a RS485 card

* ERCC models with **22A suffix are available with two compressors on two circuits.

Technical Data											
ERCC/ERCH Models		0521A	0621A	0721A	0821A	0921A	0922A	1021A	1022A	1221A	1222A
Power supply	V/ph/Hz	400/3 + N/50									
Refrigerant circuits	nr.	1	1	1	1	1	2	1	2	1	2
Compressors	nr. x mod.	2 x scroll									
Fans	nr.	2	2	2	3	3	3	3	3	4	4
Evaporator	nr.	1	1	1	1	1	2	1	2	1	2
Evaporator	mod.	Plate									
ERCC — Standard Fans											
Cooling capacity (1)	kW	46.47	55.17	64.22	74.73	82.3	82.46	94.86	94.59	110.38	110.67
Absorbed power (1)(2)	kW	17	20	23	26	30	30	35	35	41	41
EER (1)(2)		2.8	2.7	2.8	2.8	2.7	2.7	2.7	2.7	2.7	2.7
ESEER (5)		3.50	3.81	4.05	3.82	3.86	3.71	3.95	3.80	3.94	3.94
ERCH — Standard Fans											
Heating capacity (3)	kW	52	61	70	82	90	n.a.	105	n.a.	122	n.a.
Absorbed power (2)(3)	kW	17.8	20.7	23.1	27.7	30.8	n.a.	35.6	n.a.	42.1	n.a.
COP (2)(3)		2.90	2.92	3.04	2.95	2.92	n.a.	2.94	n.a.	2.89	n.a.
ERCC — EC Fans											
Cooling capacity (1)	kW	46	55	64	75	82	83	95	95	110	110
Absorbed power (1)(2)	kW	16.8	20.4	22.9	26.4	30.1	30.1	34.6	34.6	40.7	40.7
EER (1)(2)		2.77	2.70	2.81	2.83	2.73	2.74	2.74	2.73	2.72	2.72
ESEER (5)	kW	3.98	4.19	4.38	4.24	4.23	4.09	4.37	4.17	4.36	4.35
ERCH — EC Fans											
Heating capacity (3)	kW	52	61	70	82	90	n.a.	105	n.a.	122	n.a.
Absorbed power (2)(3)	kW	17.8	20.7	23.1	27.7	30.8	n.a.	35.6	n.a.	42.1	n.a.
COP (2)(3)		2.90	2.92	3.04	2.95	2.92	n.a.	2.94	n.a.	2.89	n.a.
Noise Pressure Levels (4)											
Low noise — standard fans	dB(A)	67.5	67.6	67.5	69.1	69.1	69.1	71.2	71.2	72.5	72.5
Ultra-low noise — standard fans	dB(A)	64.8	64.9	64.9	66.5	66.5	66.5	66.9	66.9	68.2	68.2
Dimensions and Weights											
Height	mm	1,836	1,836	1,836	1,836	1,836	1,836	2,146	2,146	2,146	2,146
Depth	mm	1,190	1,190	1,190	1,190	1,190	1,190	1,190	1,190	1,190	1,190
Width	mm	2,006	2,006	2,798	2,798	2,798	2,798	3,067	3,067	3,067	3,067
Weight ERCC basic (6)	kg	773	778	921	957	963	974	1,197	1,196	1,232	1,232
Weight ERCH basic (6)	kg	797	802	951	987	994	n.a.	1,241	n.a.	1,276	n.a.

1. Data refer to nominal conditions: water temperature 12/7 °C, external temperature 35 °C, glycol 0%, 50Pa, R410A refrigerant, fouling factor 0.0 m² °C/W
2. Data refer to total absorbed power (compressors and fans)
3. Data refer to nominal conditions: water temperature 40/45 °C, external temperature 7 °C dry bulb, 6 °C wet bulb, 50Pa, R410A refrigerant, fouling factor 0.0 m² °C/W
4. Data measured in free field at 1 meter from the unit operating without pump at nominal conditions, with fans at nominal conditions, coil side, Q=2 directional factor .At different conditions, with different configurations, noise values may vary.
5. European seasonal energy efficiency ratio
6. Data refer to empty unit

Construction options

- Ultra-low noise version by means of soundproofing the compressors.
- Partial/total condensation heat recovery.
- Integrated hydraulic module with one or two pumps (1 + 1 standby) with heat-protected circulation, expansion vessel, and safety valve.
- Internal water tank.
- Internal water tank including a pump to manage the primary circuit.
- Power factor improvement compressors.
- Compressor soft start.
- Cataphoresis treatment for the condensing coils.
- Shut-off taps on the compressor discharge.
- Evaporator, water tank, and pump group antifreeze heaters.
- Modification of the set point by external 0 V – 10 V signal.
- EC fans.

Options

- Remote user terminal.
- Clock card.
- RS485, FTT-10, or TCP/IP serial card.
- Metal filters and protection grilles for the condensing coils.
- Rubber or spring anti-vibration supports.

Uniflair ISCC/ISCH



Range

Cooling capacity: 60 ÷ 120 kW

Heating capacity: 66 ÷ 130 kW

Available versions

- Low noise

Refrigerant R410A

Inverter-driven scroll compressors

Standard features

- Self-supporting galvanized sheet steel framework with panels painted with epoxy powder paints (color RAL 9022) equipped with fast screws for easy and quick access.
- Inverter-driven hermetic scroll compressor, equipped with:
 - Inverter speed control
 - Oil bypass valve and line
 - Soft start
 - Integrated power factor correction condenser
 - Integrated thermal protection
 - Anti-vibration supports
- Inverter driver with IP54 protection grade coupled with a specific compressor and positioned in a dedicated housing compartment.
- Compressor soundproofing with noise insulating jackets and, only for model 1221A, soundproofing of the compressor compartment.
- Vibration absorbers on the compressor discharge and suction line (only for model 1221A).
- Single refrigerant circuit in accordance with EC standards (Directive PED 97/23/CE) in copper piping including dehydration filter, liquid sight glass, electronic expansion valve connected to and driven by the unit control, high and low pressure switches and transducers. The refrigerant circuit features an exclusive patented system for optimum lubrication management of the tandem compressors.
- Continuous operation up to -20 °C (only ISCC).
- Environmentally friendly refrigerant R410A.
- Crankcase heaters and inverter with oil-heating function.
- Brazed plate water side heat exchangers in stainless steel, insulated with closed cell expanded polyurethane and antifreeze heaters.
- Refrigerant side cycle inversion with four-way inversion valve (only ISCH).
- Water flow differential pressure switch.
- Air side exchange coil and free-cooling coil with aluminum fins and mechanically expanded copper piping.
- Backward curved blade single aspiration centrifugal fans with directly coupled motor. The impeller is statically and dynamically balanced and the bearings are sealed and lubricated for life.
- Modulating condensation control by means of continuous fan speed control.
- Electrical panel in accordance with EC standards (Directive 73/23/EC and Directive EMC 89/336/EC), IP54 protection grade with auxiliary transformer, minimum and maximum temperature control, general door interlock, cut off switch, protection and remote control switches.
- Phase sequence control.
- UPC1m microprocessor control including:
 - Chilled/hot water temperature regulation by means of self-adaption of the set-point regulation band
 - Management of the electronic thermostatic valve
 - Compressor management driven by inverter
 - Quick start start-up procedure
 - Integrated LAN card
 - Integrated clock card
 - Compatibility with Modbus protocol via RS485
 - Compatibility with the most common external BMS: LonWorks, BACnet, TCP/IP, Trend

Technical Data				
ISCC/ISCH Models		0621A	0921A	1221A
Power supply	V/ph/Hz	400/3 + N/50		
Refrigerant circuits	nr.	1	1	1
Compressors	nr.	1 ON-OFF + 1 inverter-driven (scroll)		
Fans	nr.	2	3	4
Evaporator	nr.	1	1	1
Evaporator	mod.	Plate		
ISCC — Low Noise Version				
Cooling capacity (1)	kW	58	86	114
Absorbed power (1)(2)	kW	21.5	30.9	41.5
ESEER (4)		3.98	4.42	4.35
IPLV (5)		5.63	5.70	5.66
ISCH — Low Noise Version				
Heating capacity (3)	kW	62	91	122
Absorbed power (3)(2)	kW	21.3	31.0	42.4
Noise pressure level (6)	dB(A)	67.6	69.1	72.5
ISCC — Low Noise Version (EC)				
Cooling capacity (1)	kW	58	86	114
Absorbed power (1)(2)	kW	21.5	30.9	41.5
ESEER (4)		3.98	4.42	4.35
IPLV (5)		5.63	5.70	5.66
ISCH — Low Noise Version (EC)				
Heating capacity (3)	kW	62	91	122
Absorbed power (2)(3)	kW	21.3	31.0	42.4
Noise pressure level (6)	dB(A)	65.3	66.8	71.2
Dimensions and Weights				
Height	mm	1,560	1,560	1,874
Length	mm	1,190	1,190	1,192
Width	mm	2,008	2,798	3,075
Weight ISCC (basic version) (7)	kg	818	1,179	1,277
Weight ISCH (basic version) (7)	kg	848	1,209	1,322

1. Data refer to nominal conditions: water temperature: 12/7 °C, external temperature 35 °C, glycol 0%, inverter compressor at 90 RPS, R410A refrigerant, 50Pa, fouling factor 0.0 m² °C/W
2. Data refer to total absorbed power (compressors and fans)
3. Data refer to nominal conditions: water temperature 40/45 °C, external temperature 7 °C dry bulb, 6 °C wet bulb, inverter compressor 90 RPS, R410A refrigerant, 50Pa, fouling factor 0.0 m² °C/W
4. European seasonal energy efficiency ratio
5. Integrated partial load value
6. Data measured in free field at 1 meter from the unit operating without pump at nominal conditions, with fans at nominal conditions, coil side, Q=2 directional factor. At different conditions, with different configurations and/or with EC fans, noise values may vary.
7. Data refer to an empty unit

Construction options

- Integrated hydraulic module with one or two pumps (1+1 in standby) with heat-protected circulation, expansion vessel and safety valve.
- Integrated hydraulic module with one or two inverter-driven pumps (1+1 in standby) with heat-protected circulation, expansion vessel, and safety valve.
- Cataphoresis treatment for condensing coils.
- Shut-off taps on the compressor discharge.
- Power factor correction on compressors.
- Modification of the set point by external signal 0 V – 10 V.
- Intelligent free-cooling (only with onboard pump).
- EC fans.

Options

- Remote user terminal mP20 II (up to 200 meters) for:
 - Entering of commands
 - Display unit status and alarms
- RS485 serial adaptor used to communicate with external BMS.
- LON FTT-10 serial adaptor used to communicate with external BMS managed with LON protocol.
- TCP/IP serial adaptor used to communicate with external BMS managed with SNMP protocol.
- Air side coil protection filters and grilles.
- Rubber or spring anti-vibration supports.

Uniflair ERCF



Range

Cooling capacity: 50 ÷ 110 kW

Available versions

- Low noise
- Ultra-low noise

Refrigerant R410A

Scroll compressors

Standard features

- Exclusive free-cooling system managed completely by the microprocessor control.
- Self-supporting frame in galvanized steel with panels varnished with epoxy powders (color RAL9022).
- Access panel to the unit equipped with fast screws.
- Two hermetic scroll compressors with internal thermal protection, anti-vibration supports, and crankcase heaters.
- Single refrigerant circuit* conforming to EC Directives (PED 97/23/CE) in copper tubing including filter dryer, liquid sight glass, dual flow thermostatic valve with external equalization, high and low pressure switches, and high pressure transducers.
- Environmentally friendly refrigerant R410A.
- Water side brazed plate heat exchanger in stainless steel insulated with closed cell expanded polyurethane.
- Air side free-cooling exchange coil with aluminum fins and mechanically expanded copper tubes.
- Free-cooling pump driven by the microprocessor control.
- Water flow differential pressure switch.
- Single suction backward curved blade centrifugal fans. The external tri-phase rotary electric motor is directly coupled and has an IP54 Class F equipped with internal thermal protection (Klixon). The fan impeller is dynamically and statically balanced and the cushions are sealed and lubricated for life.
- Modulating condensation control based on the condensation pressure.
- Electrical panel conforming to EC Directives (2006/95/EC and EMC 2004/108/EC), protection grade IP54 with auxiliary transformer, lockable general cut-off switch, magneto-thermal cut-off switches, and remote control.
- Sequence phase control.
- Evolved UpCO1m control for:
 - Discharge water temperature regulation
 - Management of the electronic thermostatic valve
 - Monitoring of the refrigerant load
 - Self-adjustment of the set point regulation
 - Evolved defrost operation management (ERCH)
 - Integrated LAN card
 - Compatibility with Modbus protocol via RS485
 - Compatibility with the most common external BMS: LonWorks, BACnet, TCP/IP, Trend

** ERCC models with **22A suffix are available with two compressors on two circuits.*

Technical Data											
ERCF Model		0521A	0621A	0721A	0821A	0921A	0922A	1021A	1022A	1221A	1222A
Power supply	V/ph/Hz	400/3 + N/50									
Fans	nr.	2	2	2	3	3	3	3	3	4	4
Refrigerant circuits	nr.	1	1	1	1	1	2	1	2	1	2
Compressors	nr. x mod.	2 x scroll									
Evaporator	nr.	1	1	1	1	1	2	1	2	1	2
Evaporator	mod.	Plate									
ERCF — Standard Fans											
Cooling capacity (1)	kW	51	60	70	81	89	89	103	103	120	122
Absorbed power (1)(2)	kW	17.2	20.9	23.4	26.9	30.9	30.9	35.4	35.4	41.7	41.8
EER (1)(2)		2.94	2.85	2.89	3.04	2.89	2.89	2.91	2.91	2.88	2.91
Free-cooling capacity (3)	kW	40	42.3	47	57	59	59	68	68	80	80
Noise pressure level (4)	dB(A)	67.5	67.6	67.5	69.1	69.1	69.1	71.2	71.2	72.5	72.5
Noise pressure ULN (4)	dB(A)	64.8	64.9	64.9	66.5	66.5	66.5	66.9	66.9	68.2	68.2
ERCF — EC Fans											
Cooling capacity (1)	kW	51	60	70	81	89	89	103	103	120	122
Absorbed power (1)(2)	kW	17.2	20.9	23.4	26.9	30.9	30.9	35.4	35.4	41.7	41.8
EER (1)(2)		2.94	2.85	2.89	3.04	2.89	2.89	2.91	2.91	2.88	2.91
Free-cooling capacity (3)	kW	40	42	47	57	59	59	68	68	80	80
Noise pressure level (4)	dB(A)	67.5	67.6	67.5	69.1	69.1	69.1	71.2	71.2	72.5	72.5
Noise pressure ULN (4)	dB(A)	63.1	63.2	63.2	64.7	64.7	64.7	65.3	65.3	66.6	66.6
Dimensions and Weights											
Height	mm	1,836	1,836	1,836	1,836	1,836	1,836	2,146	2,146	2,146	2,146
Depth	mm	1,190	1,190	1,190	1,190	1,190	1,190	1,190	1,190	1,190	1,190
Width	mm	2,006	2,006	2,798	2,798	2,798	2,798	3,067	3,067	3,067	3,067
Weight (basic version) (5)	kg	866	871	1,045	1,082	1,088	1,099	1,351	1,350	1,385	1,385

1. Data refer to nominal conditions: water temperature 10/15 °C, external temperature 35 °C, glycol 20%, 50Pa, R410A refrigerant, fouling factor 0.0 m² °C/W
2. Data refer to total absorbed power (compressors and fans)
3. Data refer to nominal conditions: inlet water temperature 15 °C, external temperature 5 °C, glycol 20%, 50Pa, fouling factor 0.0 m² °C/W
4. Data measured in free field at 1 meter from the unit operating without pump at nominal conditions, with fans at nominal conditions, coil side, Q=2 directional factor. At different conditions, with different configurations and/or with EC fans, noise values may vary.
5. Data refer to empty unit

Construction options

- Ultra-low noise version by means of soundproofing the compressors.
- Partial/total condensation heat recovery.
- Integrated hydraulic module with one or two pumps (1 + 1 standby) with heat-protected circulation, expansion vessel, and safety valve.
- Internal water tank.
- Internal water tank including a pump to manage the primary circuit.
- Power factor improvement compressors.
- Compressor soft start.
- Cataphoresis treatment for the condensing and free-cooling coils.
- Shut-off taps on the compressor discharge.
- Evaporator, water tank, and pump group antifreeze heaters.
- Modification of the set point by external 0 V – 10 V signal.

Options

- Remote user terminal.
- Electronic expansion valve directly controlled by the unit microprocessor control.
- Single suction backward curved fans with electronically commutated motor (EC).
- Clock card.
- RS485, FTT-10, or TCP/IP serial card for connection to external BMS.
- Metal filters and protection grilles for the condensing coil.
- Rubber or spring anti-vibration supports.

Uniflair ISCF



Range

Cooling capacity: 60 ÷ 120 kW

Available versions

- Low noise

Refrigerant R410A

Inverter-driven scroll compressors

Standard features

- Exclusive free-cooling system completely managed by the control system.
- Self-supporting galvanized sheet steel framework with panels painted with epoxy powder paints (color RAL 9022) equipped with fast screws for easy and quick access.
- Inverter-driven hermetic scroll compressor equipped with:
 - Inverter speed control
 - Oil bypass valve and line
 - Soft start
 - Integrated power factor correction condenser
 - Integrated thermal protection
 - Anti-vibration supports
- Inverter driver with IP54 protection grade coupled with a specific compressor and positioned in a dedicated housing compartment.
- Compressor soundproofing with noise insulating jackets and, only for model 1221A, soundproofing of the compressor compartment.
- Vibration absorbers on the compressor discharge and suction line (only for model 1221A).
- Single refrigerant circuit in accordance with EC standards (Directive PED 97/23/CE) in copper piping including dehydration filter, liquid sight glass, electronic expansion valve connected to and driven by the unit control, high and low pressure switches and transducers. The refrigerant circuit features an exclusive patented system for optimum lubrication management of the tandem compressors.
- Continuous operation up to -25 °C.
- Environmentally friendly refrigerant R410A.
- Crankcase heaters and inverter with oil-heating function.
- Brazed plate water side heat exchangers in stainless steel, insulated with closed cell expanded polyurethane and antifreeze heaters.
- Pump for free-cooling circuit.
- Water flow differential pressure switch.
- Air side exchange coil and free-cooling coil with aluminum fins and mechanically expanded copper piping.
- Backward curved blade single aspiration centrifugal fans with directly coupled motor. The impeller is statically and dynamically balanced and the bearings are sealed and lubricated for life.
- Modulating condensation control by means of continuous fan speed control.
- Electrical panel in accordance with EC standards (Directive 73/23/EC and Directive EMC 89/336/EC), IP54 protection grade with auxiliary transformer, minimum and maximum temperature control, general door interlock cut-off switch, protection and remote control switches.
- Phase sequence control.
- UPC1m microprocessor control including:
 - Chilled/hot water temperature regulation by means of self-adaption of the set point regulation band
 - Management of the electronic thermostatic valve
 - Compressor management driven by inverter
 - Quick start start-up procedure
 - Integrated LAN card
 - Integrated clock card
 - Compatibility with Modbus protocol via RS485
 - Compatability with the most common external BMS: LonWorks, BACnet, TCP/IP, Trend

Technical Data				
ISCF Model		0621A	0921A	1221A
Power supply	V/ph/Hz	400/3 + N/50		
Refrigerant circuits	nr.	1	1	1
Compressors	nr.	1 ON-OFF + 1 inverter-driven (scroll)		
Fans	nr.	2	3	4
Evaporator	nr.	1	1	1
Evaporator	mod.	Plate		
ISCF — Low Noise Version				
Cooling capacity (1)	kW	63	93	123
Absorbed power (1)(2)	kW	22.3	31.9	42.8
EER (1)(2)		2.82	2.90	2.87
Free-cooling capacity (3)	kW	43.6	62.7	84.0
Noise pressure level (4)	dB(A)	67.6	69.1	72.5
ISCF — Low Noise Version (EC)				
Cooling capacity (1)	kW	63	93	123
Absorbed power (1)(2)	kW	22.3	31.9	42.8
EER (1)(2)		2.82	2.90	2.87
Free-cooling capacity (3)	kW	43.6	62.7	84.0
Noise pressure level (4)	dB(A)	67.6	69.1	72.5
Dimensions and Weights				
Height	mm	1,560	1,560	1,874
Length	mm	1,190	1,190	1,192
Width	mm	2,008	2,798	3,075
Weight (basic version) (5)	kg	751	935	1,212

1. Data refer to nominal conditions water temperature 15/10 °C, external temperature 35 °C, glycol 20%, inverter compressor at 90 RPS, R410A refrigerant, ESP=50Pa, fouling factor 0.0 m² °C/W

2. Data refer to total absorbed power (compressors and fans)

3. Data refer to nominal conditions: inlet water temperature 15 °C, external temperature 5 °C, glycol 20%, inverter compressor at 90 RPS, R410A refrigerant, ESP=50Pa, fouling factor 0.0 m² °C/W

4. Data measured in free field at 1 meter from the unit operating without pump at nominal conditions, with fans at nominal conditions, coil side, Q=2 directional factor. At different conditions, with different configurations and/or with EC fans, noise values may vary.

5. Data refer to empty unit

Construction options

- Integrated hydraulic module with one or two pumps (1+1 in standby) with heat-protected circulation, expansion vessel, and safety valve.
- Integrated hydraulic module with one or two inverter-driven pumps (1+1 in standby) with heat-protected circulation, expansion vessel, and safety valve.
- Intelligent free-cooling (only with onboard pumps).
- Cataphoresis treatment for condensing and free-cooling coils.
- Shut-off taps on the compressor discharge.
- Power factor correction on compressors.
- Modification of the set point by external signal 0 V – 10 V.
- EC fans.

Options

- Remote user terminal mP20 II (up to 200 meters) for:
 - Entering of commands
 - Display unit status and alarms
- RS485 serial adaptor used to communicate with external BMS.
- LON FTT-10 serial adaptor used to communicate with external BMS managed with LON protocol.
- TCP/IP serial adaptor used to communicate with external BMS managed with SNMP protocol.
- Air side coil protection filters and grilles.
- Rubber or spring anti-vibration supports.



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