High Performance Chillers

Aquaflair
Chillers designed for technical cooling applications in data centers, buildings, and industrial processes

schneider-electric.com

Life Is On Schneider Electric

Aquaflair

Combining cutting-edge technology with energy efficiency and environmental protection is the basis of these units. Aquaflair™ 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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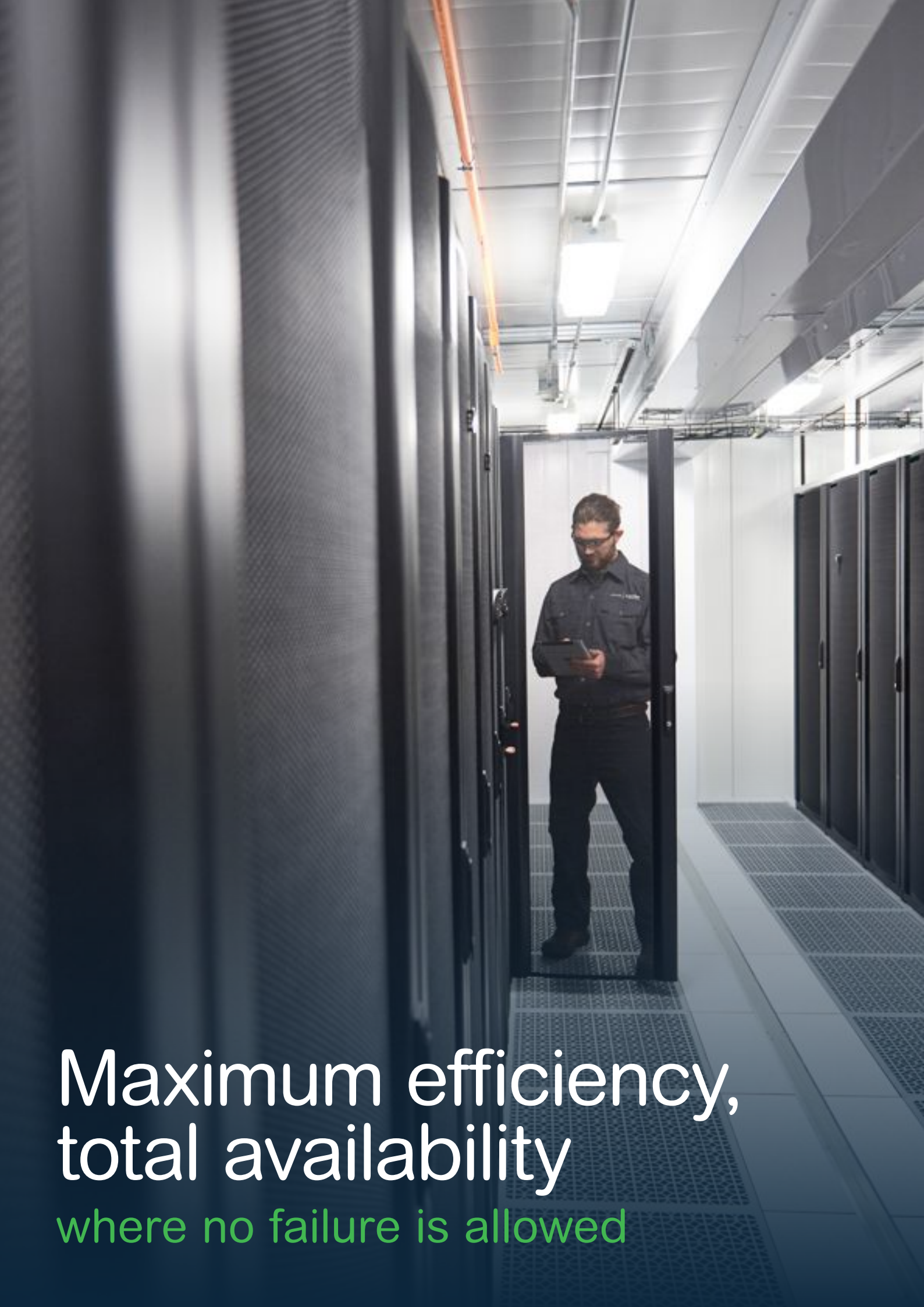


Maximum efficiency, total availability

where no failure is allowed

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

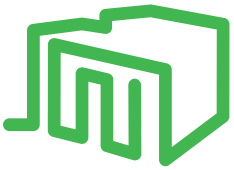
Operational service. Allows critical components to be maintained/replaced while the system is in operation.
Easy service access. Allows for all serviceable components to be replaced/maintained by easily accessible panels/doors.
Service monitoring. All the monitoring devices onboard the unit allow for 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.

Protect the environment and your investments

Focus on your core business

The reliable 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.

Smart buildings

With efficient, quiet, and adaptative operation

Cooling and heating for innovative building systems

Operative cost OpEx

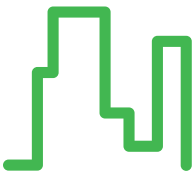
High efficiency technological solutions. Optimize the unit operation at any load or ambient condition, guaranteeing an extremely low power consumption.
Excellent performance at any load or temperature conditions. All the ranges, and particularly the modulating units, are characterized by high efficiency 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 buidings.

Where high performance cooling is crucial, Schneider Electric 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.

EcoStruxure™

Innovation At Every Level

IoT-enabled solutions that drive operational and energy efficiency

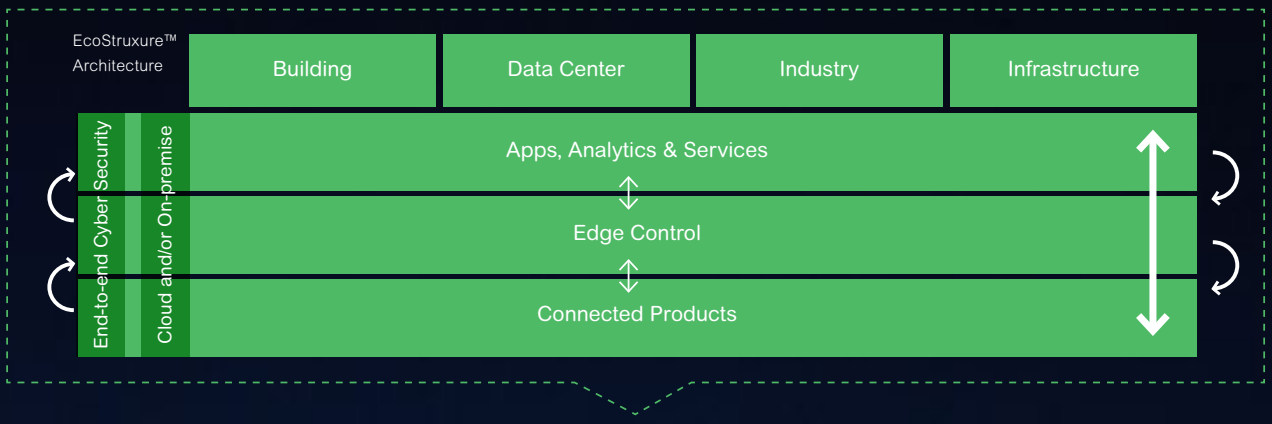
EcoStruxure™ architecture and interoperable technology platform brings together energy, automation, and software. It provides enhanced value around safety, reliability, efficiency, sustainability, and connectivity.

In turn, this advancement opens up the digital world to users across key end markets, enabling them to be competitive in today's IoT economy.

Aquaflair is EcoStruxure ready

Schneider Electric chillers seamlessly integrate with EcoStruxure. Users are able to monitor, manage and optimize any unit from local or remote locations.

One EcoStruxure architecture, serving four end markets, with six domains of expertise



EcoStruxure™ Building | EcoStruxure™ Power | EcoStruxure™ IT | EcoStruxure™ Machine | EcoStruxure™ Plant | EcoStruxure™ Grid

Connected Products:

The Internet of Things starts with the best things. Our IoT-enabled best-in-class connected products include breakers, drives, UPSs, relays, sensors, and more. Devices with embedded intelligence drive better decision-making throughout operations.

Edge Control:

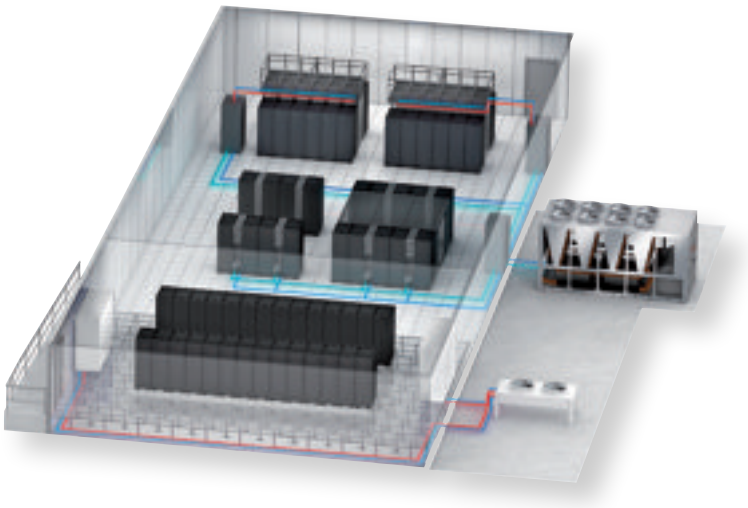
Mission-critical scenarios can be unpredictable, so control of devices at the edge of the IoT network is a must. This essential capability provides real-time solutions that enable local control at the edge, protecting safety and uptime.

Applications, Analytics & Services:

Interoperability is imperative to supporting the diverse hardware and systems in building, data center, industry, and grid end markets. EcoStruxure enables a breadth of agnostic applications, analytics & services for seamless enterprise integration.

Life Is On | Schneider Electric

Optimized management

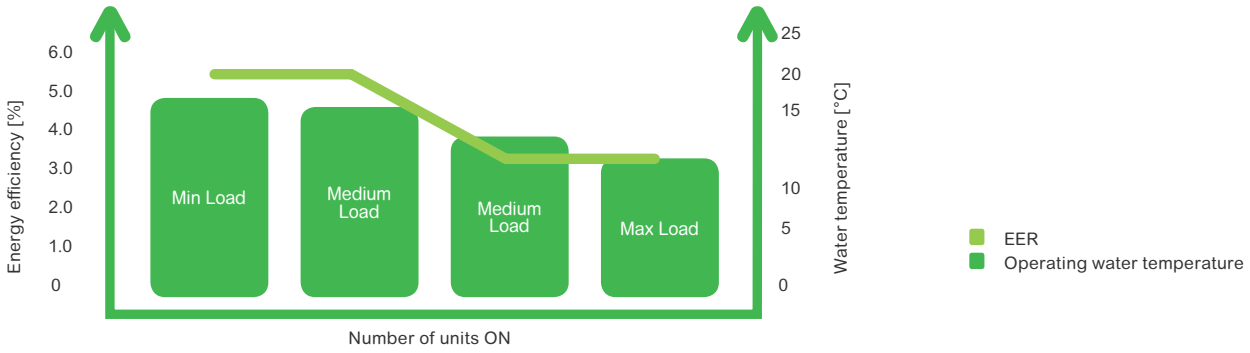


Management of the whole system allows energy consumption to be optimized and integrated control strategies to be implemented, which would otherwise not be possible.

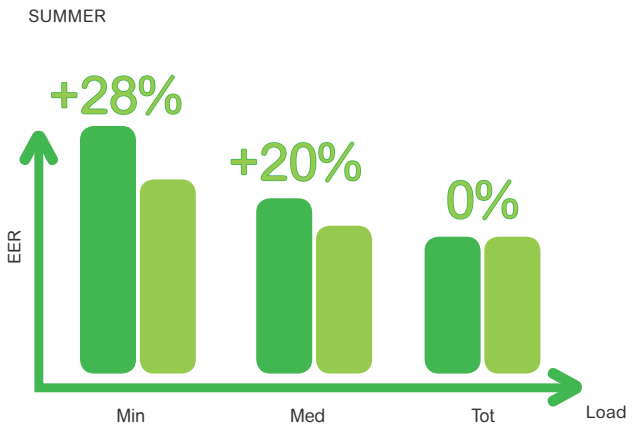
All the Schneider Electric cooling resources can therefore be linked* together in a network to maximize the operating parameters and the current required. Row and room cooling units communicate to the chiller, reducing the energy requirement by means of a “tracking logic” for the current thermal load. 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

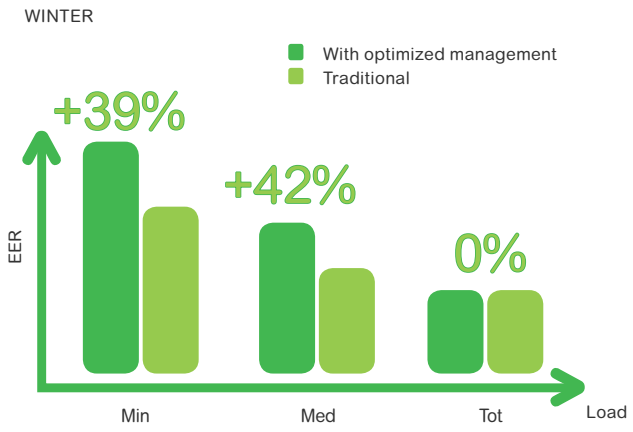


Energy saving improvement



Comparison between a traditional solution and an optimized management logic:

Summer mode external temperature: 35 °C



Free-cooling external temperature: 8 °C

Load variation: 100 kW – 300 kW
Water set point: 12 °C

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.
- 7-inch, touch-screen LCD display interface.

Acoustic impact

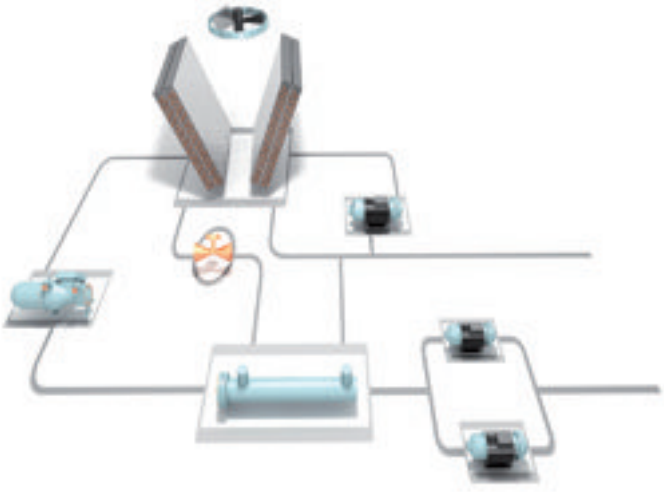
Reduction in noise impact is one of the most critical issues designers are called on to solve when choosing plant systems.

Aquaflair 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.*

Integrated free-cooling system/Water economization 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

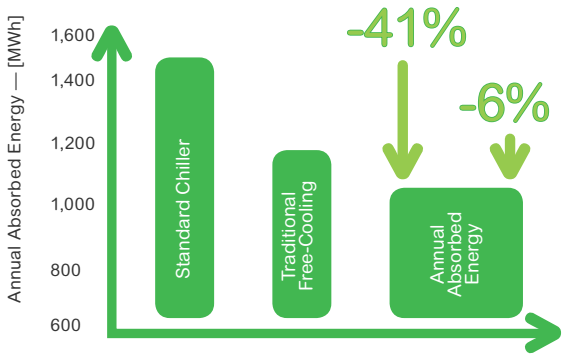
Designed for applications where the use of glycol is not allowed in the data center, this solution uses an intermediate heat exchanger to limit glycol in free-cooling circuit only, while using water in the main circuit.

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



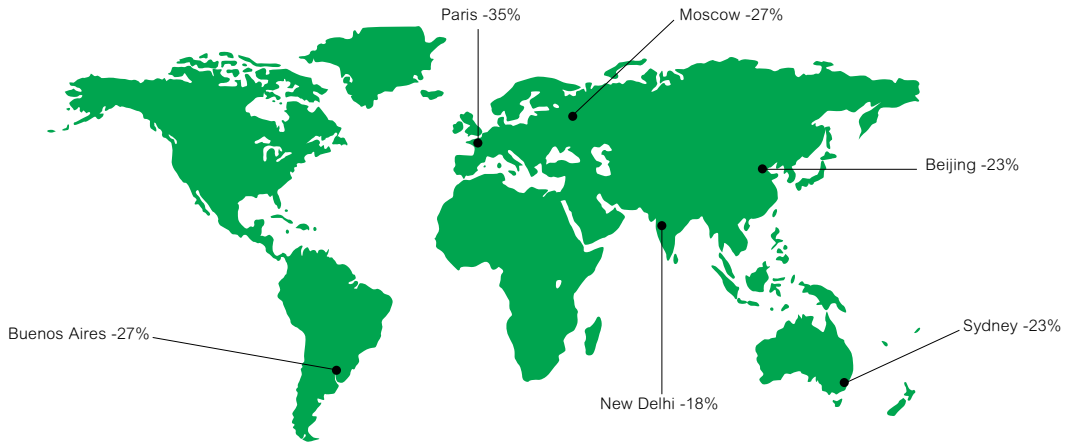
		STANDARD CHILLER	STANDARD FREE-COOLING	SE FREE-COOLING
Energy consumption	kWh	1,424,766	1,193,799	1,160,297
Energy saving	%	0	19%	23%
Cost saving	€	0	-25,406	-29,092

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

Adiabatic cooling system

Adiabatic cooling is based on the natural process of water evaporation, to shift average suction condensing and free-cooling coils air temperature to the wet bulb conditions. As water evaporates, energy is dissipated by the air and temperature is reduced, which means operating conditions are improved and energy efficiency is maximized.
This, combined with high chilled water temperature, results in significant OPEX reduction for next generation datacenters.
Schneider Electric applies these concepts on mid-large air-cooled and free-cooling chillers.

Energy Saving



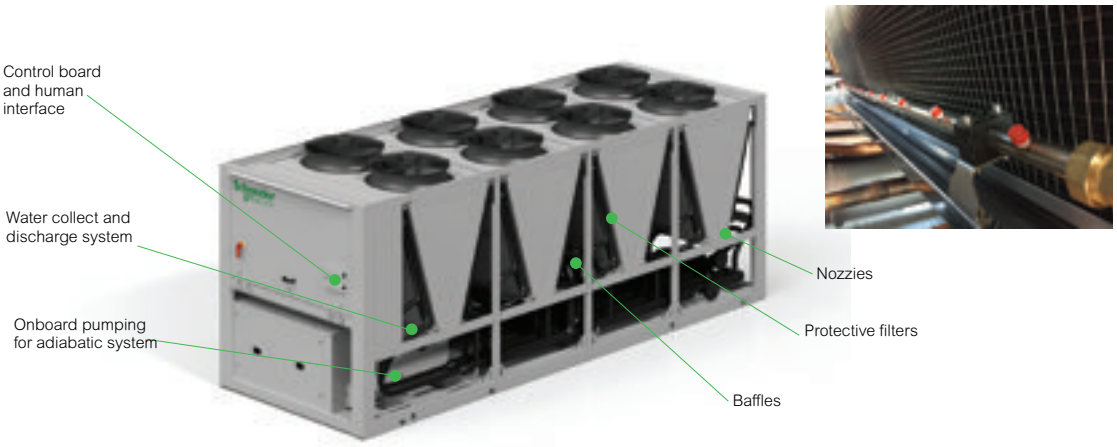
Data comparing traditional free-cooling units at 18/24°C water temperature with free-cooling adiabatic chillers at 18/28°C water temperatures.

Main Benefits

- The system is applicable on chillers and free-cooling chillers (>300kW)
- Improved cooling capacity with lower CAPEX (up to 10% cost saving)
- Increased efficiency in summer mode, lower OPEX (between 10 to 15% less, depending on the climatic zone)
- Extended free-cooling operation, (up to 3°C more economization hours)
- Factory fitted and tested
- Ready for standard ISO container shipping
- Easy maintenance
- Completely accessible unit

How it's made

- Nozzles: their position has been defined in order to optimize the drops distribution
- Layout: the "V" shape arrangement for coils and free-cooling coils allows for integrated installation
- Protective filter: prevents non-evaporated water from damaging the internal components and the coils.
- Embedded control system: controls and optimizes the unit operation, including adiabatic pre-cooling.



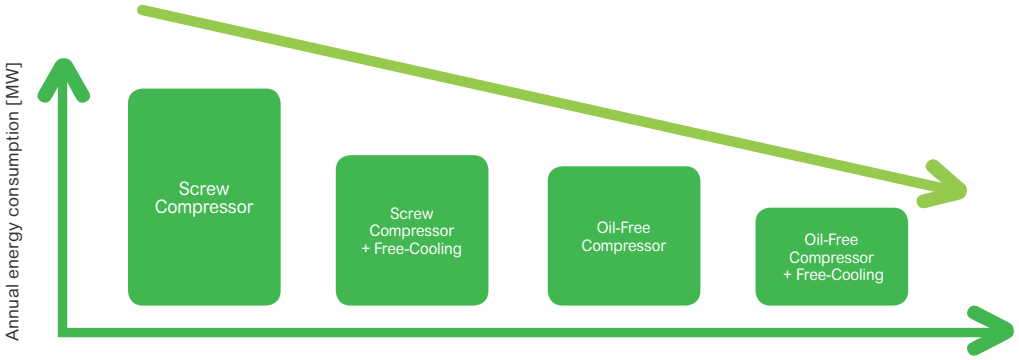
Variable speed compressors

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.

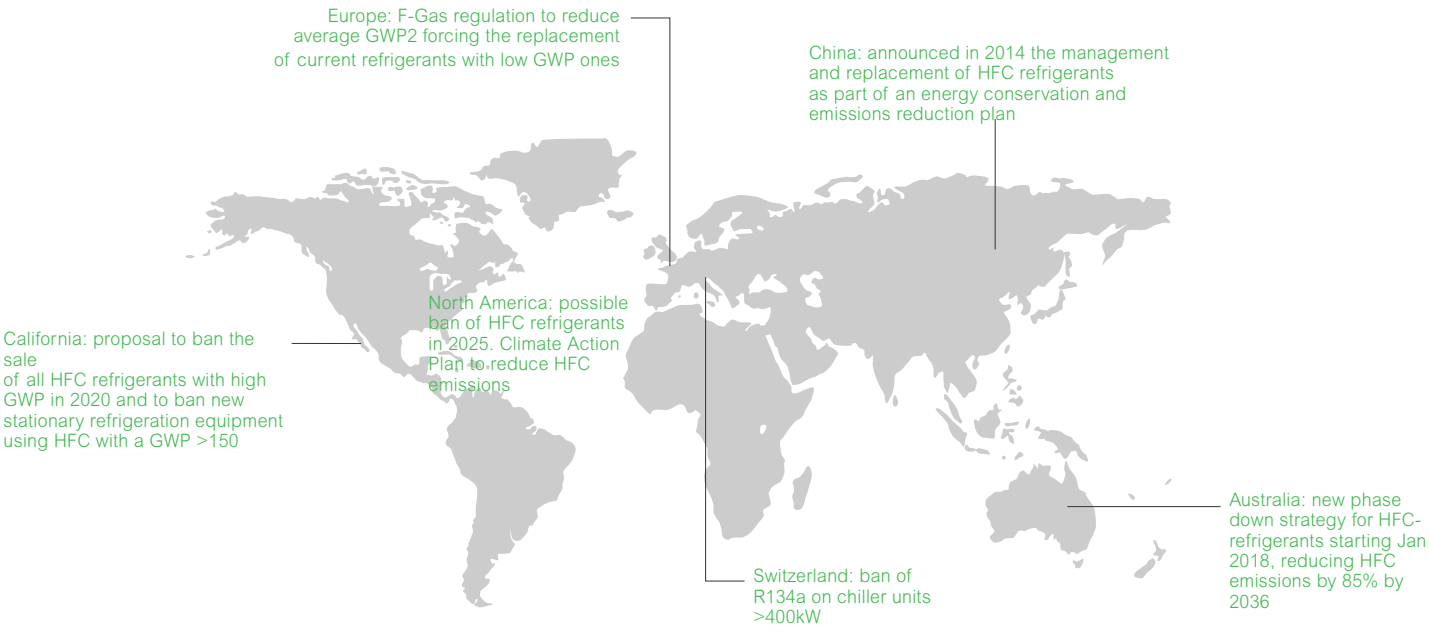
Type of chiller	100 Kw	Paris	Frankfurt	Milan	Madrid
Traditional unit	kWh	57,271	56,524	57,261	58,095
Unit with inverter	kWh	46,843	46,183	46,778	47,763
	%	-18%	-18.3%	-18.3%	-17.8%

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).

Refrigerants and efficiency levels regulations

Aiming at reducing the impact of emissions from refrigeration and air conditioning systems, governments worldwide are regulating or banning the use of HFC refrigerants.



Schneider Electric chillers with a cooling capacity higher than 300kW are available with current refrigerant R134a and alternative refrigerants (R513A and R1234ze) to minimize the environmental impact and to comply with latest regulations.

Key:

- Available in the standard unit
- Available on request

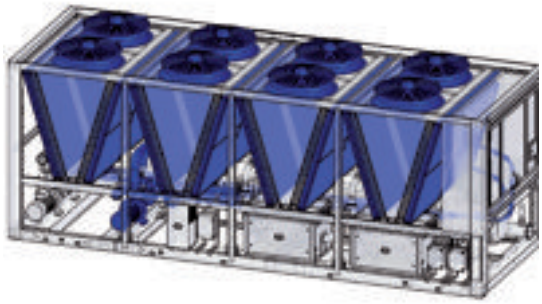
Refrigerant	GWP	Screw units	Oil-free units
R134a	1300	●	●
R513A	~ 600	●	●
R1234ze	1	●	●

Ecodesign directive 2009/125/EC

Ecodesign is a directive that covers all Electrical Related Products (ERP) and sets requirements for Minimum Efficiency Performance Standards. Select Schneider Electric Chillers, Free-cooling Chillers and Heat pumps are impacted and must comply with Ecodesign parameters according to the application.

The design principles encouraged by Ecodesign are the same promoted and adopted by Schneider Electric Cooling. In particular, high temperature design, chilled water and air economizer applications, VSD technologies, tandem compressors and EC fans.

Prepackaged solutions

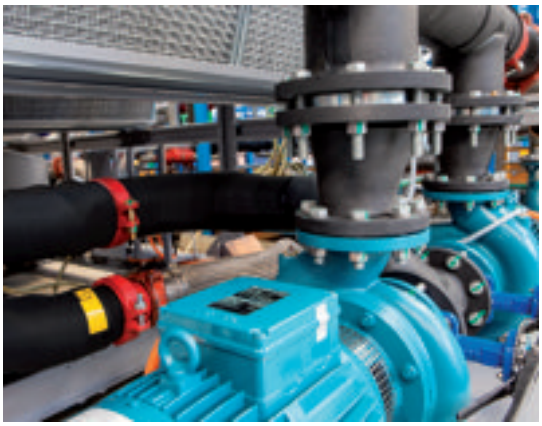


Aquaflair chillers are designed to integrate the main electrical and hydraulic components onboard the units. Free-cooling circuit, primary pumps, VSDs, water tanks, and automatic transfer switches are available to be factory installed which reduces the design and installation phases and allows a solution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



Choosing the best solution for pumps is certainly one of the most important challenges for the designer. Aquaflair 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.*

Schneider Electric Prefabricated Data Center Modules

Why go Prefabricated?

Predictable Performance

Prefabricated Modules are implemented as designed, and are configured and tested in the factory prior to shipment.

Faster Deployment

Prefabricated Modules simplify the planning, construction, and implementation, reducing the total time from concept to commissioning.

Scalability

Prefabrication gives you the flexibility to scale your data centre growth at a more granular level, minimizing oversizing and up-front expenditures.

Why Schneider Electric?

1. Experience

Schneider Electric has over 15 years of experience in prefabricated data center manufacturing.
Over 300 projects with 500+ modules.

2. Broad offering of Prefabricated Modules

Wide range of prefabricated options to meet different applications.

3. Global capabilities with local support

Global supply chain with experts in your region to support with applications and engineering.

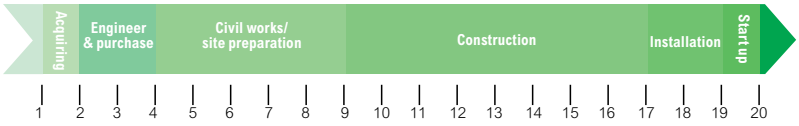
4. Ecostruxure IT

Modules are fully instrumented and compatible with Schneider's DCIM software suite.

5. Library of Reference designs

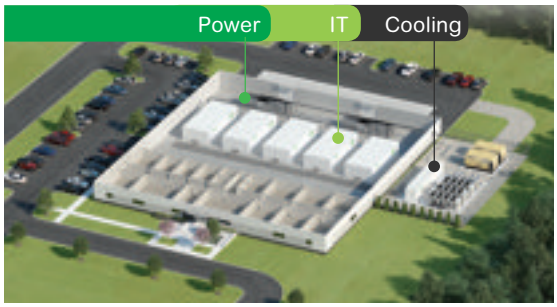
Pre-engineered prefabricated reference designs in a range of sizes and tier levels.

New Build



Containerized Solution

TIME SAVED = 30%



Prefabricated IT

- Available in All-in-One, Single, Dual, and Multi-Bay Configurations
- Containerized Modules – easy international transport, ruggedized applications
- Purpose-Built Modules for maximum space and aesthetics
- Modular Rooms – field-assembled, combine benefits of modularity and traditional IT space1

Prefabricated Power

- Enclosed power modules with UPS, switchboards, fire suppression, monitoring, and security
- Power skids for large-scale, indoor deployments
- Ranges from 250kW-1200kW

Prefabricated Chilled water systems

- Hydronics Modules – Pumps, drives, valves, and controls for Tier II and Tier III designs
- Complete portfolio of chillers with and without free cooling options
- Indirect and direct air economizer, chilled water, and direct expansion solutions optimized for prefabricated modules

Tested solutions for reliable and predictable installations

All Schneider Electric chillers are fully tested in the factory in accordance with applicable standards, ensuring the units will have the quality our customers expect.

Factory Acceptance Tests (FAT) are available for customers to verify unit performance. These are conducted at our manufacturing facility in Conselve, Italy. A dedicated laboratory is set up to provide a controlled testing climate.

Our chiller lab is certified for industrial cooling equipment and allows for testing units in a wide range of operating conditions to meet customer requirements and designs.

Chiller test lab capabilities

Product ranges:

- Air-cooled chillers
- Free-cooling and adiabatic chillers
- Water-cooled chillers
- Heat pumps

Operating ranges:

- Max nominal cooling capacity: 1.300kW
- Max air temperature: +55°C
- Min air temperature: +5°C
- Max water temperatures in/out: 32/20°C

[Aquaflair cooling portfolio]

		Small	Medium
Air-cooled units	Cooling only	 LRAC Page 24 – 25	 ERAC Page 28 – 29  ISAC Page 32 – 33
	Heat pumps	 LRAH Page 26 – 27	 ERAH Page 30 – 31  ISAH Page 34 – 35
Free-cooling units	Cooling only		 ERAF Page 50 – 51  ISAF Page 52 – 53
Water-cooled units	Cooling only		
Units with ducted fans	Cooling only		 ERCC Page 68 – 69  ISCC Page 70 – 71
	Free-cooling		 ERCF Page 72 – 73  ISCF Page 74 – 75

 Scroll compressors

 Screw compressors

 Oil-free compressors

 Variable speed drive compressors

Large	Extra Large
 TRAC Page 36 – 37	 BREC Page 42 – 45
 TSAC Page 40 – 41	 BCEC Page 48 – 45
 TRAH Page 38 – 39	
 TRAF Page 54 – 55	 BREF Page 58 – 61
 TSAF Page 56 – 57	 BCEF Page 64 – 65
	 BRWC Page 66 – 67

[Air-cooled water chillers with axial fans for outdoor installations]

LRAC

Range

Cooling capacity: 6 ÷ 40 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 UNI EN ISO 12944 standards.
- Between one to two hermetic scroll compressors with internal thermal protection and anti-vibration feet.
- Ecological refrigerant: R410A.
- Refrigerant circuit in compliance with Pressure Equipment Directive 2014/68/EU (PED) 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.
- Stainless steel, brazed plate heat exchanger insulated with closed cell, expanded polyurethane.
- 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 Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) 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 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.
- 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 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:
  - 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.*

Technical Data										
LRAC Model		**023B**	**032B**	**041B**	**054A**	**067A**	**090A**	**120A**	**137A**	**180A**
Power supply	V/ph/Hz	230/1/50			400/3/50					
Compressors/circuits	nr. x mod.	1/1	1/1	1/1	1/1	1/1	1/1	2/1	2/1	2/1
Evaporator	nr. x mod.	1 x brazed plate								
Fans	nr.	1	1	1	1	2	2	2	3	4
LRAC Model										
Cooling capacity (1)	kW	6	8	9	13	16	18	26	31	36
Absorbed power (1)(2)	kW	1,7	2,4	3,1	4,5	5,1	6,3	9,1	10,7	12,7
EER (1)(2)		3,4	3,2	3	2,9	3,1	2,8	2,8	2,9	2,8
SEER low temperature (a)	%	158,5	155,6	**	**	**	**	171,5	178,8	169,7
SEER mid temperature (b)	%	180,8	178,6	161,4	153,4	166,2	157,2	205,9	207,9	204,1
SEPR (c)	-	4,72	4,98	4,74	4,5	4,62	4,52	4,81	4,97	4,66
LRAC Noise pressure level										
Noise pressure level (3)	dBA	34	34	34	35	37	38	38	40	41
LRAC Dimensions										
Height	mm	650	650	650	1271	1271	1271	1271	1271	1271
Depth	mm	458	458	458	458	458	458	615	615	615
Width	mm	1274	1274	1274	1273	1273	1273	2054	2054	2054

1. Data refer to nominal conditions: water temperature 12/7 °C, external temperature 35 °C glycol 0%, refrigerant R410A, fouling factor 0.0 m2 °C/W
2. Data refer to total absorbed power (compressors and fans)
3. Data refer to 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 and with different configurations, noise values may vary

a. Seasonal Energy Efficiency Ratio calculated at 7/12°C water temperatures according to Regulation EU 2016/2281

b. Seasonal Energy Efficiency Ratio calculated at 18/23°C water temperatures according to Regulation EU 2016/2281different configurations, noise values may vary

c. Seasonal Energy Performance Ratio according to Regulation EU 2016/2281

*. Data in different unit configurations are available in Schneider Electric specific technical literature

**. Unit not compliant with Ecodesign Regulation EU 2016/2281. Please refer to Schneider Electric for further details

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 water piping filter.

LRAH

Range

Cooling capacity: 6 ÷ 40 kW
Heating capacity: 7 ÷ 43 kW

Available versions

- Low noise
- Top operating performance

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 UNI EN ISO 12944 standards.
- 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 Pressure Equipment Directive 2014/68/EU (PED) 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 Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) 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.
- Heat pumps complying with Ecodesign and Energy Labelling Directive 2009/125/EC (heat pumps up to 70kW).

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

Technical Data										
LRAH Model		**023B**	**032B**	**041B**	**054A**	**067A**	**090A**	**120A**	**137A**	**180A**
Power supply	V/ph/Hz	230/1/50			400/3/50					
Compressors/circuits	nr. x mod.	1/1	1/1	1/1	1/1	1/1	1/1	2/1	2/1	2/1
Evaporator	nr. x mod.	1 x brazed plate								
Fans	nr.	1	1	1	1	2	2	2	3	4
LRAH Model										
Heating capacity (1)		6	9	10	15	18	21	30	36	42
Absorbed power (1)(2)		1,8	2,5	2,9	4,3	5,3	6,1	9,1	10,7	13,4
COP (1)(2)		3,33	3,60	3,45	3,49	3,40	3,44	3,30	3,36	3,13
SCOP (a)		130	133	131	130	127	139	144	148	143
Seasonal efficiency class (Regulation UE 811/2013)		A+	A+	A+	A+	A+	A+	A+	A+	A+
LRAH Noise pressure level										
Noise pressure level (3)	dBA	34	34	34	35	37	38	38	40	41
LRAH Dimensions										
Height	mm	650	650	650	1271	1271	1271	1271	1271	1271
Depth	mm	458	458	458	458	458	458	615	615	615
Width	mm	1274	1274	1274	1273	1273	1273	2054	2054	2054

1. Data refer to nominal conditions: Inlet/outlet water temperature: 40/45°C; external air dry bulb temperature 7°C, external air wet bulb temperature 6°C, glycol 0%; refrigerant R410A, fouling factor 0.0 m2 °C/W
2. Data refer to total absorbed power (compressors and fans)
3. Data refer to 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 and with different configurations, noise values may vary

a. Seasonal Coefficient Of Performance according to Regulation EU 813/2013

*. Data in different unit configurations are available in Schneider Electric specific technical literature different configurations, noise values may vary

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.

[Air cooled water chillers with axial fans for outdoor installations]

ERAC

Range

Cooling capacity: 50 ÷ 110 kW

Available versions

- Basic
- Quiet
- UltraQuiet

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, phase sequence control, safety internal valve, non-return discharge valve, oil level glass, anti-vibration supports.
- Compressor casing for noise reduction, safe operation, and protection.
- Single or double (**22A model) refrigerant circuit* conforming to EC Directives Pressure Equipment Directive 2014/68/EU (PED) in copper tubing including filter dryer, liquid sight glass, thermostatic valve with external equalization, high and low pressure switches, and high and low 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 aluminium fins and mechanically expanded copper tubes.
- 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 with fan speed regulation.
- Electrical panel conforming to Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) protection grade IP54 with maximum internal temperature control, auxiliary transformer, general auxiliary cut-off switch, magneto-thermal protection switches with trip alarm signal on compressors, magneto thermal protection for fan speed control protection, safe-motor for pumps protection and remote control cut-off switches. Electrical board equipped with an embedded contact for an external 230V isolating motorized valve.
- 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 temperature regulation by means of an exclusive algorithm
  - Production of chilled water to -10 °C
  - 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
  - Main electrical data acquisition and management
  - Integrated clock card.
  - 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).

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

Technical Data											
ERAC Model		**0521A**	**0621A**	**0721A**	**0821A**	**0921A**	**0922A**	**1021A**	**1022A**	**1221A**	**1222A**
Power supply	V/ph/Hz	400/3/50									
Circuits / Compressors	nr. x mod.	2/1	2/1	2/1	2/1	2/1	2/2	2/1	2/2	2/1	2/2
Evaporator	nr. x mod.	1 x brazed plate									
Fans	nr.	2	2	2	3	3	3	3	3	3	3
ERAC — Basic/Quiet version											
Cooling capacity (1)	kW	46	54	63	72	80	81	94	94	108	108
Absorbed power (1)(2)	kW	14,9	18,5	20,5	23,3	27,1	27,2	30,8	30,8	35,8	35,8
EER (1)(2)		3,08	2,91	3,07	3,09	2,95	2,97	3,05	3,05	3,01	3,01
IPLV (3)		4,51	4,49	4,77	4,57	4,49	3,71	4,98	3,83	4,96	3,99
SEER low temperature (a)	%	156	152,3	161,2	160,6	155,2	**	170,4	151,8	167,7	154,3
SEER mid temperature (b)	%	182,9	175,3	186	188,2	180	175,7	197,9	181,4	193,5	181
SEPR (c)	-	4,99	4,92	5,15	5,13	4,95	4,77	5,47	4,95	5,47	5,07
ERAC — UltraQuiet version											
Cooling capacity (1)	kW	44	52	61	70	78	78	91	91	103	104
Absorbed power (1)(2)	kW	14,8	18,7	20,9	23,3	27,4	27,5	31,5	31,5	37,1	37,1
EER (1)(2)		2,97	2,78	2,91	3,00	2,84	2,83	2,89	2,88	2,77	2,80
IPLV (3)		4,75	4,67	4,89	4,82	4,69	3,78	5,09	3,77	5,04	3,92
SEER low temperature (a)	%	158	150,6	157,8	161,7	153,9	**	166,8	**	160,5	**
SEER mid temperature (b)	%	180,7	169,3	178	184,9	174	168,5	188,2	171,3	180	167,8
SEPR (c)	-	5,03	4,92	5,12	5,17	4,96	4,76	5,47	4,88	5,39	4,97
ERAC Noise Pressure Levels											
Basic version (4)	dB(A)	50.2	50.2	54.3	54.3	54.3	54.3	56.2	56.2	56.7	56.7
Quiet version (4)	dB(A)	49.9	50.0	54.1	54.1	54.1	54.1	54.6	54.6	54.8	54.8
UltraQuiet version (4)	dB(A)	44.9	45.1	46.7	46.7	46.7	46.7	49.2	49.2	49.9	49.9
ERAC Dimensions											
Height (EC fans)	mm	1600	1600	1600	1600	1600	1600	1910	1910	1910	1910
Depth	mm	1214	1214	1219	1219	1219	1184	1272	1184	1272	1184
Width	mm	2026	2026	2821	2821	2821	2804	3088	3073	3088	3073

1. Data refer to nominal conditions: water temperature 12/7 °C, external temperature 35 °C glycol 0%, refrigerant R410A, fouling factor 0.0 m2 °C/W
   Unit equipped with EC fans
2. Data refer to total absorbed power (compressors and fans)
   Unit equipped with EC fans
3. Integrated partial load value
   Unit equipped with EC fans
4. Data refer to 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 and with different configurations, noise values may vary
   Unit equipped with EC fans

a. Seasonal Energy Efficiency Ratio calculated at 7/12°C water temperatures according to Regulation EU 2016/2281s

b. Seasonal Energy Efficiency Ratio calculated at 18/23°C water temperatures according to Regulation EU 2016/2281

c. Seasonal Energy Performance Ratio according to Regulation EU 2016/2281

*. Data refer to units equipped with EC fans. Data in different configurations are available in Schneider Electric specific technical literature

**. Unit not compliant with Ecodesign Regulation EU 2016/2281. Please refer to Schneider Electric for further details

Construction options

- Quiet version with compressor soundproof casing.
- UltraQuiet version with fan speed reduction and compressor soundproof casing.
- Double power supply with automatic integrated management on the active line.
- Acoustic-Composite fans with electronic commutated motors (EC).
- Partial condensation heat recovery.
- Total condensation heat recovery (ERAC**21A models only).
- Electronic expansion valve (**21A models only).
- Integrated hydronic system with one or two circulation pumps.
- Integrated hydronic system with one inverter driven circulation pump.
- Internal water tank.
- Internal water tank including a pump to manage the primary circuit.
- Anti-freeze heaters option unit can operate down to -20 °C external temperature.
- Discharge shut-off valves.
- Power factor improvement compressors.
- Compressor soft start.
- Cataphoresis treatment for the condensing coils.
- Modification of the set point by external 0 V – 10 V signal.

For external accessories see page 76

ERAH

Range

Heating capacity: 55 ÷ 120 kW

Available versions

- Basic
- Quiet
- UltraQuiet

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, discharge gas thermal protection, phase sequence control, safety internal valve, non-return discharge valve, oil level glass, anti-vibration supports.
- Compressor casing for noise reduction, safe operation, and protection.
- Single refrigerant circuit conforming to Pressure Equipment Directive 2014/68/EU (PED) in copper tubing including filter dryer, liquid sight glass, thermostatic valve with external equalization, high and low pressure switches, and high and low 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 aluminium fins and mechanically expanded copper tubes.
- Refrigerant side cycle inversion with four-way inversion valve.
- 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 with fan speed regulation.
- Electrical panel conforming to Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) protection grade IP54 with maximum internal temperature control, auxiliary transformer, general auxiliary cut-off switch, magneto-thermal protection switches with trip alarm signal on compressors, magneto thermal protection for fan speed control protection, safe-motor for pumps protection and remote control cut-off switches. Electrical board equipped with an embedded contact for an external 230V isolating motorized valve.
- Phase sequence control and phase presence monitoring, minimum / maximum voltage protection and correct phase balancing.
- Anti-freeze heaters.
- Microprocessor control system including:
  - Local human interface with external display and accessible via an access hatch
  - Outlet chilled water / hot water temperature regulation by means of an exclusive algorithm
  - Production of chilled water to -10 °C
  - 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
  - Main electrical data acquisition and management
  - Integrated clock card.
  - 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).
- Heat pumps complying with Ecodesign and Energy Labelling Directive 2009/125/EC.

Technical Data								
ERAH Model		**0521A**	**0621A**	**0721A**	**0821A**	**0921A**	**1021A**	**1221A**
Power supply	V/ph/Hz	400/3/50						
Compressors/circuits	nr. x mod.	2/1	2/1	2/1	2/1	2/1	2/1	2/1
Evaporator	nr. x mod.	1 x brazed plate						
Fans	nr.	2	2	2	3	3	3	3
ERAH - Basic / Quiet version								
Heating capacity (1)	kW	53	62	73	83	92	110	125
Absorbed power (1)(2)	kW	16,0	19,1	21,5	25,0	28,3	32,9	37,6
COP (1)(2)		3,31	3,24	3,39	3,32	3,25	3,34	3,32
SCOP (a)	%	135	136	143	139	139	149	149
Seasonal efficiency class (Regulation UE 811/2013)		A+	A+	A+	A+	A+	-	-
ERAH - UltraQuiet version								
Heating capacity (1)	kW	53	62	73	83	92	110	125
Absorbed power (1)(2)	kW	16,0	19,1	21,5	25,0	28,3	32,9	37,6
COP (1)(2)		3,31	3,24	3,39	3,32	3,25	3,34	3,32
SCOP (a)	%	135	136	143	139	139	149	149
Seasonal efficiency class (Regulation UE 811/2013)		A+	A+	A+	A+	A+	-	-
ERAH Noise Pressure Levels								
Basic version (3)	dB(A)	50.2	50.2	54.3	54.3	54.3	56.2	56.7
Quiet version (3)	dB(A)	49.9	50.0	54.1	54.1	54.1	54.6	54.8
UltraQuiet version (3)	dB(A)	44.9	45.1	46.7	46.7	46.7	49.2	49.9
ERAH Dimensions								
Height (EC fans)	mm	1600	1600	1600	1600	1600	1910	1910
Depth	mm	1214	1214	1219	1219	1219	1272	1272
Width	mm	2026	2026	2821	2821	2821	3088	3088

1. Data refer to nominal conditions: Inlet/outlet water temperature: 40/45°C; external air dry bulb temperature 7°C, external air wet bulb temperature 6°C, glycol
2. Data refer to total absorbed power (compressors and fans)
   Unit equipped with EC fans
3. Data refer to 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 and with different configurations, noise values may vary
   Unit equipped with EC fans

a. Seasonal Coefficient Of Performance according to Regulation EU 813/2013

*. Data refer to units equipped with EC fans. Data in different configurations are available in Schneider Electric specific technical literature

Construction options

- Quiet version with compressor soundproof casing.
- UltraQuiet version with fan speed reduction and compressor soundproof casing.
- Double power supply with automatic integrated management on the active line.
- Acoustic-Composite fans with electronic commutated motors (EC).
- Partial condensation heat recovery.
- Electronic expansion valve.
- Integrated hydronic system with one or two circulation pumps.
- Integrated hydronic system with one inverter driven circulation pump.
- Internal water tank.
- Internal water tank including a pump to manage the primary circuit.
- Discharge shut-off valves.
- Power factor improvement compressors.
- Compressor soft start.
- Cataphoresis treatment for the condensing coils.
- Modification of the set point by external 0 V – 10 V signal.

For external accessories see page 76

ISAC

Range

Cooling capacity: 60 ÷ 110 kW

Available versions

- Quiet
- UltraQuiet

Refrigerant R410A
Inverter-driven 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.
- Inverter-driven hermetic Scroll compressor, equipped with inverter speed control, oil by-pass valve and line, integrated soft start, power factor correction condenser, integrated thermal protection, crankcase heaters and inverter with oil heating function, anti-vibration supports, and an inverter driver with IP54 protection grade coupled with a specific compressor and positioned in a dedicated housing compartment.
- Compressor soundproof casing for noise reduction, safe operation, and protection (Quiet version).
- Single refrigerant circuit conforming to Pressure Equipment Directive 2014/68/EU (PED) in copper tubing including filter dryer, liquid sight glass, thermostatic valve with external equalization, high and low pressure switches, and high and low pressure transducers.
- Environmentally friendly refrigerant R410A.
- Electronic expansion valve.
- 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.
- 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 with fan speed regulation.
- Electrical panel conforming to Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) protection grade IP54 with maximum internal temperature control, auxiliary transformer, general auxiliary cut-off switch, magneto-thermal protection switches with trip alarm signal on compressors, magneto thermal protection for fan speed control protection, safe-motor for pumps protection and remote control cut-off switches. Electrical board equipped with an embedded contact for an external 230V isolating motorized valve.
- 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 temperature regulation by means of an exclusive algorithm
  - Production of chilled water to -10 °C
  - 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
  - Main electrical data acquisition and management
  - Integrated clock card.
  - 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				
ISAC Model		**0621A**	**0921A**	**1221A**
Power supply	V/ph/Hz	400/3/50		
Compressors/circuits	nr. x mod.	2/1	2/1	2/1
Evaporator	nr. x mod.	1 x brazed plate		
Fans	nr.	2	3	3
ISAC — Quiet version				
Cooling capacity (1)	kW	58	82	111
Absorbed power (1)(2)	kW	18,9	26,3	36,7
EER (1)(2)		3,06	3,11	3,02
IPLV (3)		4,62	4,84	5,14
SEER low temperature (a)	%	167,1	172,5	184,9
SEER mid temperature (b)	%	193,9	194,1	219,3
SEPR (c)	-	4,81	5,1	5,6
ISAC — UltraQuiet version				
Cooling capacity (1)	kW	56	80	107
Absorbed power (1)(2)	kW	19,1	26,5	37,9
EER (1)(2)		2,93	3,01	2,82
IPLV (3)		4,71	4,93	5,27
SEER low temperature (a)	%	168,8	174	186,5
SEER mid temperature (b)	%	199,8	201	221,7
SEPR (c)	-	4,92	5,19	5,6
ISAC Noise Pressure Levels				
Quiet version (4)	dB(A)	53.9	56.1	57.0
UltraQuiet version (4)	dB(A)	49.0	50.9	53.0
ISAC Dimensions				
Height (EC fans)	mm	1600	1600	1910
Depth	mm	1214	1214	1276
Width	mm	2009	2804	3067

1. Data refer to nominal conditions: water temperature 12/7 °C, external temperature 35 °C glycol 0%, refrigerant R410A, fouling factor 0.0 m2 °C/W
   Unit equipped with EC fans
2. Data refer to total absorbed power (compressors and fans)
   Unit equipped with EC fans
3. Integrated partial load value
   Unit equipped with EC fans
4. Data refer to 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 and with different configurations, noise values may vary
   Unit equipped with EC fans

a. Seasonal Energy Efficiency Ratio calculated at 7/12°C water temperatures according to Regulation EU 2016/2281

b. Seasonal Energy Efficiency Ratio calculated at 18/23°C water temperatures according to Regulation EU 2016/2281

c. Seasonal Energy Performance Ratio according to Regulation EU 2016/2281

*. Data refer to units equipped with EC fans. Data in different configurations are available in Schneider Electric specific technical literature

Construction options

- UltraQuite version with fan speed reduction and compressor soundproof casing.
- Double power supply with automatic integrated management on the active line.
- Acoustic-Composite fans with electronic commutated motors (EC).
- Partial condensation heat recovery.
- Integrated hydronic system with one or two circulation pumps.
- Integrated hydronic system with one inverterdriven circulation pump.
- Discharge shut-off valves
- Cataphoresis treatment for the condensing coils.
- Modification of the set point by external 0 V – 10 V signal.

For external accessories see page 76

ISAH

Range

Heating capacity: 65 ÷ 130 kW

Available versions

- Quiet
- UltraQuiet

Refrigerant R410A
Inverter-driven 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.
- Inverter-driven hermetic Scroll compressor, equipped with inverter speed control, oil by-pass valve and line, integrated soft start, power factor correction condenser, integrated thermal protection, crankcase heaters and inverter with oil heating function, anti-vibration supports, and an inverter driver with IP54 protection grade coupled with a specific compressor and positioned in a dedicated housing compartment.
- Compressor soundproof casing for noise reduction, safe operation, and protection (Quiet version).
- Single refrigerant circuit conforming to Pressure Equipment Directive 2014/68/EU (PED) in copper tubing including filter dryer, liquid sight glass, thermostatic valve with external equalization, high and low pressure switches, and high and low pressure transducers.
- Environmentally friendly refrigerant R410A.
- Electronic expansion valve.
- 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.
- 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 with fan speed regulation.
- Electrical panel conforming to Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) protection grade IP54 with maximum internal temperature control, auxiliary transformer, general auxiliary cut-off switch, magneto-thermal protection switches with trip alarm signal on compressors, magneto thermal protection for fan speed control protection, safe-motor for pumps protection and remote control cut-off switches. Electrical board equipped with an embedded contact for an external 230V isolating motorized valve.
- Phase sequence control and phase presence monitoring, minimum / maximum voltage protection and correct phase balancing.
- Anti-freeze heaters.
- Microprocessor control system including:
  - Local human interface with external display and accessible via an access hatch
  - Outlet chilled water / hot water temperature regulation by means of an exclusive algorithm
  - Production of chilled water to -10 °C
  - 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
  - Main electrical data acquisition and management
  - Integrated clock card.
  - 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).
- Heat pumps complying with Ecodesign and Energy Labelling Directive 2009/125/EC.

Technical Data				
ISAH Model		**0621A**	**0921A**	**1221A**
Power supply	V/ph/Hz	400/3/50		
Compressors/circuits	nr. x mod.	2/1	2/1	2/1
Evaporator	nr. x mod.	1 x brazed plate		
Fans	nr.	2	3	3
ISAH — Quiet version				
Heating capacity (1)	kW	64	91	126
Absorbed power (1)(2)	kW	20,2	28,0	37,8
COP (1)(2)		3,16	3,23	3,32
SCOP (a)	%	126	129	144
Seasonal efficiency class (Regulation UE 811/2013)		A+	-	-
ISAH — UltraQuiet version				
Heating capacity (1)	kW	64	91	126
Absorbed power (1)(2)	kW	20,2	28,0	37,8
COP (1)(2)		3,16	3,23	3,32
SCOP (a)	%	126	129	144
Seasonal efficiency class (Regulation UE 811/2013)		A+	-	-
ISAH Noise Pressure Levels				
Quiet version (3)	dB(A)	53.9	56.1	57.0
UltraQuiet version (3)	dB(A)	49.0	50.9	53.0
ISAH Dimensions				
Height (EC fans)	mm	1600	1600	1910
Depth	mm	1214	1214	1276
Width	mm	2009	2804	3067

1. Data refer to nominal conditions: Inlet/outlet water temperature: 40/45°C; external air dry bulb temperature 7°C, external air wet bulb temperature 6°C, glycol 0%; refrigerant R410A, fouling factor 0.0 m2 °C/W
   Unit equipped with EC fans
2. Data refer to total absorbed power (compressors and fans)
   Unit equipped with EC fans
3. Data refer to 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 and with different configurations, noise values may vary
   Unit equipped with EC fans

a. Seasonal Coefficient Of Performance according to Regulation EU 813/2013

*. Data refer to units equipped with EC fans. Data in different configurations are available in Schneider Electric specific technical literature

Construction options

- UltraQuite version with fan speed reduction and compressor soundproof casing.
- Double power supply with automatic integrated management on the active line.
- Acoustic-Composite fans with electronic commutated motors (EC).
- Partial condensation heat recovery.
- Integrated hydronic system with one or two circulation pumps.
- Integrated hydronic system with one inverterdriven circulation pump.
- Discharge shut-off valves
- Cataphoresis treatment for the condensing coils.
- Modification of the set point by external 0 V – 10 V signal.

For external accessories see page 76

TRAC

Range

Cooling capacity: 110 ÷ 400 kW

Available versions

- Basic
- UltraQuiet

Refrigerant R410A

Scroll Compressors

Standard features

- Self-supporting frame in galvanized steel with panels finished in epoxy powders (color 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.
- Single (models **21A1) or double (models **42A1) refrigerant circuit conforming to Pressure Equipment Directive 2014/68/EU (PED) 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.
- 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 heat exchange coils:
  - micro-channel condensing coils for TRAC models up to 260kW (1221A1 – 2842A1).
  - coils with aluminum fins and mechanically-expanded copper tubes for TRAC models of 300kW and higher (3642A1 – 4142A1).
- 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 Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) with maximum/minimum internal temperature control, auxiliary transformer, general auxiliary cut-off switch, electric bars distribution for power supply, thermos-magnetic protection for compressors, fans and auxiliaries, safe-motor for pumps protection and remote control cut-off switches. The electrical board is equipped with embedded contact for an externally fitted 230V isolating motorized valve.
- Phase sequence control and phase presence monitoring, minimum / maximum voltage protection and correct phase balancing.
- Microprocessor control system including:
  - 7inch. touch screen display interface
  - outlet chilled water temperature regulation by means of an exclusive PID algorithm
  - Production of chilled water down 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 on the touch screen display for data downloading/firmware uploading
  - Integrated SNMP, Modbus TCP/IP communication protocol
  - Main electrical data acquisition and management
  - Integrated 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
  - Compatibility with BMS by means the main protocols
  - Full integration into a Data Center Infrastructure Management (DCIM) System
  - Set-point variation based on external temperature or signal (0-10V, 4-20mA or 0-20mA).

Technical Data											
TRAC Model		**1221A1**	**1421A1**	**1742A1**	**2042A1**	**2342A1**	**2642A1**	**2842A1**	**3642A1**	**4042A1**	**4142A1**
Power supply	V/ph/Hz	400/3/50									
Circuits /Compressors	nr. x mod.	2/1	2/1	4/2	4/2	4/2	4/2	4/2	4/2	4/2	4/2
Evaporator type	nr. x mod.	1 x brazed plate									
Fans	nr.	2	2	3	3	4	4	4	5	6	6
TRAC - Basic version											
Cooling capacity (1)	kW	120	130	166	187	217	240	262	311	355	387
Absorbed power (1)(2)	kW	39,5	46,1	50,8	60,1	66,7	78,4	91,3	101,9	115,7	129,4
EER (1)(2)		3,03	2,83	3,26	3,11	3,25	3,06	2,87	3,06	3,07	2,99
IPLV (3)		4,95	4,90	5,21	4,93	5,07	5,09	5,07	5,29	5,27	5,13
SEER low temperature (a)	%	176,3	174,2	183,1	176,1	180	181,9	180,3	187,1	186,3	183,6
SEER mid temperature (b)	%	209,5	207,1	203,7	194,8	198	213	211	214,9	213,3	214,1
SEPR (c)	-	5,51	5,47	5,49	5,34	5,36	5,52	5,53	5,79	5,76	5,65
TRAC - UltraQuiet version											
Cooling capacity (1)	kW	113	122	158	177	207	226	243	293	334	359
Absorbed power (1)(2)	kW	41,1	49,2	51,6	62,1	67,7	81,9	98,1	107,3	120,8	138,2
EER (1)(2)		2,75	2,48	3,06	2,84	3,05	2,76	2,48	2,73	2,76	2,60
IPLV (3)		4,97	4,87	5,24	4,97	5,09	5,12	5,07	5,32	5,28	5,13
SEER low temperature (a)	%	178,1	174,1	183,3	176,2	180	182,2	178,7	186,5	185,9	182,2
SEER mid temperature (b)	%	208,5	204,2	206,1	194,2	199,8	211,7	207,4	216,2	214	211,4
SEPR (c)	-	5,57	5,48	5,64	5,4	5,49	5,6	5,55	5,89	5,84	5,68
TRAC Noise Pressure Levels											
Basic version (4)	dB(A)	55,9	56,5	56,9	57,1	58,6	59,2	59,2	60,6	61,1	61,1
UltraQuiet version (4)	dB(A)	52,0	52,8	52,6	52,9	54,2	55,3	55,8	56,9	57,4	57,5
TRAC Dimensions											
Height (EC fans)	mm	2236	2236	2236	2236	2236	2236	2236	2156	2156	2156
Depth	mm	3162	3162	4612	4612	5562	5562	5562	5730	5730	5730
Width	mm	1151	1151	1151	1151	1151	1151	1151	2204	2204	2204

1. Data refer to nominal conditions: water temperature 12/7 °C, external temperature 35 °C glycol 0%, refrigerant R410A, fouling factor 0.0 m2 °C/W
   Unit equipped with EC fans
2. Data refer to total absorbed power (compressors and fans)
   Unit equipped with EC fans
3. Integrated partial load value
   Unit equipped with EC fans
4. Data refer to 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 and with different configurations, noise values may vary
   Unit equipped with EC fans

a. Seasonal Energy Efficiency Ratio calculated at 7/12°C water temperatures according to Regulation EU 2016/2281

b. Seasonal Energy Efficiency Ratio calculated at 18/23°C water temperatures according to Regulation EU 2016/2281

c. Seasonal Energy Performance Ratio according to Regulation EU 2016/2281

*. Data refer to units equipped with EC fans. Data in different configurations are available in Schneider Electric specific technical literature

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 separate power supply 230/3/50Hz.
- Fans with electronic commutated motors (EC).
- Low ambient temperature option: TRAC units can operate down to -20°C outdoor temperature
- UltraQuiet version with soundproof casing, vibration absorbers for compressors and fan speed reduction.
- Electronic expansion valve (EEV)
- Integrated hydronic system with one or two circulation pumps (1 + 1 standby), or one or two inverter-driven circulation pumps (1+1 standby) and pressure transducer.
- Internal water tank.
- Partial and total condensation heat recovery.
- Antifreeze protection on evaporator and pump/s group.
- Suction shut-off valves on compressor.
- Power phase correction capacitors.
- Soft starter for compressor to reduce the starting current.
- Power meter for a continuous measurement of the unit power consumption and communication to the BMS.
- Refrigerant leak monitoring system that generates alarms in the event of leakages in the compressor housing.
- Adiabatic pre-cooling system (only for TRAC 3642A1-4042A1-4142A1) composed by spray nozzles, pumping station and polyurethanic protection panels.
- Air-side coils equipped with metal filters and protection grilles.
- Later metal grilles for unit protection.
- Anti-corrosion protection treatment for air-side coils.

For external accessories see page 76

TRAH

Range

Heating capacity : 110 ÷ 370 kW

Available versions

- Basic
- UltraQuiet

Refrigerant R410A
Scroll Compressors

Standard features

- Self-supporting frame in galvanized steel with panels finished in epoxy powders (color 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 **21A1) or double (models **42A1) refrigerant circuit conforming to Pressure Equipment Directive 2014/68/EU (PED) 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.
- 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 heat exchange coils with aluminum fins and mechanically-expanded copper tubes.
- Electrical heaters for air-side heat exchanger protection in heat pump mode.
- 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 Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) with maximum/minimum internal temperature control, auxiliary transformer, general auxiliary cut-off switch, electric bars distribution for power supply, thermos-magnetic protection for compressors, fans and auxiliaries, safe-motor for pumps protection and remote control cut-off switches. The electrical board is equipped with embedded contact for an externally fitted 230V isolating motorized valve.
- Low ambient temperature operation down to -20°C outdoor temperature.
- 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:
  - 7inch. touch screen display interface
  - outlet chilled water / hot water temperature regulation by means of an exclusive PID algorithm
  - Production of chilled water down 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 on the touch screen display for data downloading/firmware uploading
  - Integrated SNMP, Modbus TCP/IP communication protocol
  - Main electrical data acquisition and management
  - Integrated 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
  - Compatibility with BMS by means the main protocols
  - Full integration into a Data Center Infrastructure Management (DCIM) System
  - Set-point variation based on external temperature or signal (0-10V, 4-20mA or 0-20mA).
- Heat pumps complying with Ecodesign and Energy Labelling Directive 2009/125/EC

Technical Data										
TRAH Model		**1221A1**	**1421A1**	**1742A1**	**2042A1**	**2342A1**	**2642A1**	**2842A1**	**3642A1**	**4042A1**
Power supply	V/ph/Hz	400/3/50								
Circuits /Compressors	nr. x mod.	2/1	2/1	4/2	4/2	4/2	4/2	4/2	4/2	4/2
Evaporator type	nr. x mod.	1 x brazed plate								
Fans	nr.	2	2	3	3	4	4	4	5	6
TRAH - Basic version										
Cooling capacity (1)	kW	116	129	161	185	215	238	269	307	350
Absorbed power (1)(2)	kW	40,0	45,6	51,5	58,9	65,6	76,9	88,6	101,3	114,7
EER (1)(2)		2,89	2,83	3,13	3,15	3,28	3,09	3,04	3,03	3,05
Heating capacity (3)		120	137	171	191	223	248	281	330	372
Absorbed power (3)(2)		38,5	43,7	50,3	57,6	66,8	77,2	86,5	99,7	112,4
COP (3)(2)		3,12	3,14	3,39	3,32	3,34	3,22	3,25	3,31	3,31
SCOP (a)	%	135	139	125	129	127	129	124	130	127
TRAH - UltraQuiet version										
Cooling capacity (1)	kW	112	124	156	179	206	228	258	294	336
Absorbed power (1)(2)	kW	40,7	47,0	51,6	59,9	66,0	78,9	90,6	104,3	117,3
EER (1)(2)		2,74	2,64	3,01	2,99	3,12	2,90	2,84	2,82	2,87
Heating capacity (3)		114	130	164	181	211	234	276	313	353
Absorbed power (3)(2)		36,7	41,8	47,3	54,6	62,7	73,1	84,3	94,8	106,1
COP (3)(2)		3,11	3,11	3,46	3,32	3,37	3,20	3,28	3,31	3,33
SCOP (a)	%	145	149	137	140	141	141	136	143	140
TRAH Noise Pressure Levels										
Basic version (4)	dB(A)	55,9	56,5	56,9	57,1	58,6	59,2	59,2	60,6	61,1
UltraQuiet version (4)	dB(A)	52,0	52,8	52,6	52,9	54,2	55,3	55,8	56,9	57,4
TRAH Dimensions										
Height (EC fans)	mm	2236	2236	2236	2236	2236	2236	2236	2156	2156
Depth	mm	3162	3162	4612	4612	5562	5562	5562	5730	5730
Width	mm	1151	1151	1151	1151	1151	1151	1151	2204	2204

1. Data refer to nominal conditions: water temperature 12/7 °C, external temperature 35 °C glycol 0%, refrigerant R410A, fouling factor 0.0 m2 °C/W
   Unit equipped with EC fans
2. Data refer to total absorbed power (compressors and fans)
   Unit equipped with EC fans
3. Data refer to nominal conditions: Inlet/outlet water temperature: 40/45°C; external air dry bulb temperature 7°C, external air wet bulb temperature 6°C, glycol 0%; refrigerant R410A, fouling factor 0.0 m2 °C/W
   Unit equipped with EC fans
4. Data refer to 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 and with different configurations, noise values may vary
   Unit equipped with EC fans

a. Seasonal Coefficient Of Performance according to Regulation EU 813/2013

*. Data refer to units equipped with EC fans. Data in different configurations are available in Schneider Electric specific technical literature

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 separate power supply 230/3/50Hz.
- Fans with electronic commutated motors (EC).
- UltraQuiet version with soundproof casing, vibration absorbers for compressors and fan speed reduction.
- Electronic expansion valve (EEV)
- Integrated hydronic system with one or two circulation pumps (1 + 1 standby), or one or two inverter-driven circulation pumps (1+1 standby) and pressure transducer.
- Internal water tank.
- Partial condensation heat recovery.
- Antifreeze protection on evaporator and pump/s group.
- Suction shut-off valves on compressor.
- Power phase correction capacitors.
- Soft starter for compressor to reduce the starting current.
- Power meter for a continuous measurement of the unit power consumption and communication to the BMS.
- Refrigerant leak monitoring system that generates alarms in the event of leakages in the compressor housing.
- Air-side coils equipped with metal filters and protection grilles.
- Later metal grilles for unit protection.
- Anti-corrosion protection treatment for air-side coils.

For external accessories see page 76

[Variable speed air-cooled water chillers for outdoor installations]

TSAC

Range

Cooling capacity: 110 ÷ 330 kW

Available versions

- Quiet
- UltraQuiet

Refrigerant R410A
Inverter-driven scroll compressors

Standard features

- Self-supporting frame in galvanized steel with panels finished in epoxy powders (color RAL9022).
- Access panel to the unit equipped with handles and fast screws.
- Between two to four hermetic scroll compressors (one inverter driven) with oil by-pass valve and line, integrated soft start, power factor correction condenser, integrated thermal protection and inverter with oil heating function, anti-vibration supports, and an inverter driver with IP54 protection grade coupled with a specific compressor and positioned in a dedicated housing compartment.
- Compressors soundproofed protective housing for noise impact reduction and safe operation and protection (Quiet version).
- Single (model 1521A) or double (models **42A) refrigerant circuit conforming to Pressure Equipment Directive 2014/68/EU (PED) with copper tubing including: filter dryer, liquid sight glass, electronic expansion valve, solenoid valve on the liquid line, water-flow differential pressure switch and high and low pressure transducers.
- Environmentally friendly refrigerant R410A.
- Electronic expansion valve (EEV) entirely managed by the control system.
- Water side brazed plate heat exchanger in stainless steel insulated with closed cell expanded polyurethane.
- Water flow differential pressure switch.
- Air side condensing coils:
  - micro-channel condensing coils for TSAC models up to 220kW (1521A – 2642A)
  - coils with aluminum fins and mechanically-expanded copper tubes for TSAC models of 280kW and higher (3642A – 4042A).
- Acousti-Composite fans with electronic commutated motors (EC): 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 Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) with maximum/minimum internal temperature control, auxiliary transformer, general auxiliary cut-off switch, electric bars distribution for power supply, thermos-magnetic protection for compressors, fans and auxiliaries, safe-motor for pumps protection and remote control cut-off switches. The electrical board is equipped with embedded contact for an externally fitted 230V isolating motorized valve.
- Phase sequence control and phase presence monitoring, minimum / maximum voltage protection and correct phase balancing.
- Microprocessor control system including:
  - 7inch. touch screen display interface
  - outlet chilled water temperature regulation by means of an exclusive PID algorithm
  - Production of chilled water down 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 on the touch screen display for data downloading/firmware uploading
  - Integrated SNMP, Modbus TCP/IP communication protocol
  - Main electrical data acquisition and management
  - Integrated 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
  - Compatibility with BMS by means the main protocols
  - Full integration into a Data Center Infrastructure Management (DCIM) System
  - Set-point variation based on external temperature or signal (0-10V, 4-20mA or 0-20mA).

Technical Data						
TSAC Model		**1521A**	**2042A**	**2642A**	**3642A**	**4042A**
Power supply	V/ph/Hz	400/3/50				
Compressors/circuits	nr. x mod.	2/1	4/2	4/2	4/2	4/2
Evaporator	nr. x mod.	1 x brazed plate				
Fans	nr.	2	3	4	5	6
Quiet version						
Cooling capacity (1)	kW	127,8	152	206,3	290,6	324,2
Absorbed power (1)(2)	kW	38,1	45,6	61,5	86,7	96,8
EER (1)(2)		3,35	3,34	3,35	3,35	3,35
IPLV (3)		5,78	5,33	5,50	5,58	5,42
SEER low temperature (a)	%	204,6	193,9	195,8	197,7	195
SEER mid temperature (b)	%	245	227,5	227,8	228	227,3
SEPR (c)	-	6,13	5,74	5,92	6,02	5,88
UltraQuiet version						
Cooling capacity (1)	kW	121,4	145,5	196,5	276,3	307,2
Absorbed power (1)(2)	kW	39,2	45,7	62	88,3	97,8
EER (1)(2)		3,10	3,18	3,17	3,13	3,14
IPLV (3)		5,76	5,33	5,50	5,58	5,42
SEER low temperature (a)	%	204,4	194,6	196,2	198,1	195,5
SEER mid temperature (b)	%	243,5	230,3	230,3	229,6	229,3
SEPR (c)	-	6,19	5,87	5,99	6,11	6,01
Noise Pressure Levels						
Quiet version (4)	dB(A)	57,3	56,9	59,8	60,4	60,8
UltraQuiet version (4)	dB(A)	53,5	53,9	54,8	55,8	56,2
Dimensions						
Height (EC fans)	mm	2236	2236	2236	2156	2156
Depth	mm	4112	4612	5562	5730	5730
Width	mm	1151	1151	1151	2204	2204

1. Data refer to nominal conditions: water temperature 12/7 °C, external temperature 35 °C glycol 0%, refrigerant R410A, fouling factor 0.0 m2 °C/W
   Unit equipped with EC fans
2. Data refer to total absorbed power (compressors and fans)
   Unit equipped with EC fans
3. Integrated partial load value
   Unit equipped with EC fans
4. Data refer to 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 and with different configurations, noise values may vary
   Unit equipped with EC fans

a. Seasonal Energy Efficiency Ratio calculated at 7/12°C water temperatures according to Regulation EU 2016/2281

b. Seasonal Energy Efficiency Ratio calculated at 18/23°C water temperatures according to Regulation EU 2016/2281

c. Seasonal Energy Performance Ratio according to Regulation EU 2016/2281

*. Data refer to units equipped with EC fans. Data in different configurations are available in Schneider Electric specific technical literature

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 separate power supply 230/3/50Hz.
- Low ambient temperature option: TSAC units can operate down to -20°C outdoor temperature.
- UltraQuiet version with soundproof casing, vibration absorbers for compressors and fan speed reduction.
- Integrated hydronic system with one or two circulation pumps (1 + 1 standby), or one or two inverter-driven circulation pumps (1+1 standby) and pressure transducer.
- Internal water tank (only TSAC3642A-4042A models).
- Partial condensation heat recovery.
- Antifreeze protection on evaporator and pump/s group.
- Suction shut-off valves on compressor.
- Power phase correction capacitors.
- Soft starter for compressor to reduce the starting current.
- Power meter for a continuous measurement of the unit power consumption and communication to the BMS.
- Refrigerant leak monitoring system that generates alarms in the event of leakages in the compressor housing.
- Adiabatic pre-cooling system (3642A-4042A models) composed by spray nozzles, pumping station and polyurethanic protection panels.
- Air-side coils equipped with metal filters and protection grilles.
- Later metal grilles for unit protection.
- Electrolytic treatment for air-side coils to allow installation in corrosive atmosphere.

For external accessories see page 76

BREC

Range

Cooling capacity: 400 ÷ 700 kW

Available versions

- Basic
- Quiet
- UltraQuiet

Refrigerant R134a
Double screw compressors
Basic Offer

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.
- Operation possible with external temperature up to 50 °C at full load.
- Two refrigerant circuits conforming to Pressure Equipment Directive 2014/68/EU (PED) 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, internally grooved copper tubes and integrated subcooling circuit.
- 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 Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) 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 including:
  - Human Machine Interface (HMI) with external display and accessible via an access hatch
  - Outlet chilled water temperature regulation by means of an exclusive PID algorithm
  - Electronic expansion valve managed by the control system
  - Refrigerant charge monitoring
  - Monitoring of the absorbed current and checking of possible malfunctions
  - Advanced antifreeze protection on evaporator
  - Production of chilled water to -10 °C
  - External motorized isolating valve management
  - Anti-freeze protection
  - Compressor timing and protection
  - 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 to connect more than one unit to the local area network
  - Integrated USB connection for data downloading
  - Integrated RS4805 serial card data downloading
  - Integrated clock card.
- Microprocessor control system, in addition, allows:
  - Limiting of absorbed current on preset value or external signal
  - Quick restart procedure to reach total cooling capacity within two or three minutes according to the configuration
  - 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					
BREC Model		**1802A**	**2202A**	**2502A**	**2802A**
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
Basic or Quiet version					
Cooling capacity (1)	kW	440	503	531	651
Absorbed power (1)(2)	kW	142	158	170	211
EER (1)(2)		3,10	3,19	3,13	3,09
IPLV (3)		4,66	4,74	4,70	4,73
SEER mid temperature (b)	%	181,3	185	183,1	185,6
SEPR (c)	-	5,23	5,32	5,27	5,33
Basic or Quiet version with subcooling economizer					
Cooling capacity (1)	kW	475	540	571	702
Absorbed power (1)(2)	kW	155	176	186	246
EER (1)(2)		3,07	3,07	3,07	2,86
IPLV (3)		4,73	4,69	4,77	4,54
SEER mid temperature (b)	%	173,3	178,2	176	178,7
SEPR (c)	-	5,22	5,3	5,27	5,29
UltraQuiet version					
Cooling capacity (1)	kW	407	475	498	613
Absorbed power (1)(2)	kW	148	161	175	220
EER (1)(2)		2,75	2,96	2,85	2,79
IPLV (3)		4,64	4,75	4,71	4,70
SEER mid temperature (b)	%	176,7	184	181,9	179,5
SEPR (c)	-	5,24	5,36	5,32	5,31
UltraQuiet version with subcooling economizer					
Cooling capacity (1)	kW	452	515	546	677
Absorbed power (1)(2)	kW	166	186	197	261
EER (1)(2)		2,73	2,77	2,78	2,60
IPLV (3)		4,67	4,67	4,75	4,45
SEER mid temperature (b)	%	168,8	175,5	173,5	170,8
SEPR (c)	-	5,11	5,31	5,23	5,12
Noise Pressure Levels					
Basic version (4)	dB(A)	63,2	64,1	63,8	64,2
Quiet version (4)	dB(A)	62,1	63,2	63,1	63,2
Quiet version with chimneys (4)	dB(A)	54,4	55,0	54,4	55,1
UltraQuiet version (4)	dB(A)	58,7	59,7	59,5	59,7
Dimensions					
Height (EC fans) (5)	mm	2531	2531	2531	2531
Depth	mm	5005	6435	6435	6435
Width	mm	2200	2200	2200	2200

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
   Unit equipped with EC fans
2. Data refer to total absorbed power (compressors and fans)
   Unit equipped with EC fans
3. Integrated partial load value
   Unit equipped with EC fans
4. Data refer to 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 and with different configurations, noise values may vary
   Unit equipped with EC fans
5. Data refer to unit without chimneys
   Unit equipped with EC fans

b. Seasonal Energy Efficiency Ratio calculated at 18/23°C water temperatures according to Regulation EU 2016/2281

c. Seasonal Energy Performance Ratio according to Regulation EU 2016/2281

*. Data refer to units equipped with EC fans. Data in different configurations are available in Schneider Electric specific technical literature

**. Unit not compliant with Ecodesign Regulation EU 2016/2281. Please refer to Schneider Electric for further details

Construction options

- Double power supply with automatic integrated management on the active line and integrated condenser for control board.
- Fans with electronic commutated motors (EC).
- Power phase correction capacitors.
- Subcooling Economizer.
- Low external temperature: unit works down to -20 °C.
- Quite version with soundproof casing and vibration absorbers for compressors.
- Noise reduction chimneys for Quiet version.
- UltraQuiet version with soundproof casing, vibration absorbers for compressors and fan speed reduction.
- 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 (1+1 standby) inverter-driven circulation pumps and pressure transducers.
- Antifreeze protection on evaporator and pump group.
- Condensing coils equipped with metal safety grilles and filters.
- Coil manifolds protection panels.
- Anti-corrosion protection treatment for air-side coils

For external accessories see page 76

BREC

Range

Cooling capacity: 400 ÷ 1,300 kW

Available versions

- Basic
- Quiet
- UltraQuiet

Refrigerant R134a
Double screw compressors
Premium offer

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 Pressure Equipment Directive 2014/68/EU (PED) 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, internally grooved copper tubes and integrated subcooling circuit.
- 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 Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) 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 including:
  - Human Machine Interface (HMI) with external display and accessible via an access hatch
  - Outlet chilled water temperature regulation by means of an exclusive PID algorithm
  - Electronic expansion valve managed by the control system
  - Refrigerant charge monitoring
  - Monitoring of the absorbed current and checking of possible malfunctions
  - Advanced antifreeze protection on evaporator
  - Production of chilled water to -10 °C
  - External motorized isolating valve management
  - Anti-freeze protection
  - Compressor timing and protection
  - Pump rotation (if present) on a time basis for equal operation and start-up of the stand-by pump (with alarm signal) in the event of a breakdown
  - Integrated LAN card to connect more than one unit to the local area network
  - Integrated USB connection for data downloading
  - Integrated RS4805 serial card data downloading
  - Integrated clock card.
- Microprocessor control system, in addition, allows:
  - Limiting of absorbed current on preset value or external signal
  - Quick restart procedure to reach total cooling capacity within two or three minutes according to the configuration
  - 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										
BREC Model		**1812A**	**2212A**	**2512A**	**2812A**	**3212A**	**3612A**	**4212A**	**4812A**	**5612A**
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	14
Basic or Quiet version										
Cooling capacity (1)	kW	392	499	542	641	731	822	960	1054	1152
Absorbed power (1)(2)	kW	120	151	169	192	224	264	297	331	378,4
EER (1)(2)		3,27	3,31	3,21	3,34	3,27	3,12	3,24	3,19	3,04
IPLV (3)		4,81	5,28	4,88	5,24	5,11	5,22	4,97	5,13	4,76
SEER low temperature (a)	%	165,1	178,2	163,2	179,1	175,5	175,2	171,8	177,6	162,4
SEER mid temperature (b)	%	195,4	212,4	187,9	210,6	207,6	210,2	195,3	210,9	193,1
SEPR (c)	-	5,39	6,09	5,56	5,93	5,82	5,99	5,74	5,95	5,48
Basic or Quiet version with subcooling economizer										
Cooling capacity (1)	kW	419	533	581	687	782	887	1034	1141	1244
Absorbed power (1)(2)	kW	134	168	184	218	253	294	336	370	422
EER (1)(2)		3,13	3,80	3,16	3,16	3,10	3,02	3,08	3,09	2,95
IPLV (3)		4,71	5,25	4,96	5,10	5,00	5,24	4,89	5,17	4,76
SEER low temperature (a)	%	163,3	174,6	161,6	175,6	172,4	172,1	169,2	174,9	**
SEER mid temperature (b)	%	184,8	202,8	177,9	199,9	197,5	199,9	186	202,3	184,6
SEPR (c)	-	5,37	6,05	5,57	5,93	5,82	5,97	5,76	5,9	5,42
UltraQuiet version										
Cooling capacity (1)	kW	365	471	506	599	680	772	899	994	1086
Absorbed power (1)(2)	kW	123	155	174	203	233	279	309	346	395
EER (1)(2)		2,97	3,04	2,91	2,96	2,92	2,77	2,91	2,88	2,75
IPLV (3)		4,79	5,30	4,88	5,18	5,10	5,13	4,94	5,04	4,69
SEER low temperature (a)	%	162,8	174,7	161,3	174,4	172,8	169,5	167,7	171,6	**
SEER mid temperature (b)	%	191,7	210,5	186,4	203,4	202	196,9	190	196,1	182,1
SEPR (c)	-	5,46	6,11	5,63	5,92	5,85	5,87	5,68	5,8	5,38
UltraQuiet version with subcooling economizer										
Cooling capacity (1)	kW	396	510	553	660	747	853	995	1106	1202
Absorbed power (1)(2)	kW	143	179	195	236	269	317	355	392	445
EER (1)(2)		2,77	2,85	2,84	2,80	2,78	2,70	2,81	2,83	2,70
IPLV (3)		4,67	5,21	4,93	5,00	4,93	5,09	4,84	5,00	4,65
SEER low temperature (a)	%	160,1	171,9	**	170,1	169,3	164,6	164,6	167,1	**
SEER mid temperature (b)	%	183,2	201,9	176,7	190,6	191,6	187,7	179,3	189,8	174,9
SEPR (c)	-	5,37	6,03	5,5	5,7	5,7	5,59	5,57	5,57	5,18
Noise Pressure Levels										
Basic version (4)	dB(A)	62,8	65,8	65,2	65,4	66,2	66,3	66,7	67,2	68,0
Quiet version (4)	dB(A)	61,9	63,8	63,5	63,6	63,9	63,9	64,2	64,5	65,2
Quiet version with chimneys (4)	dB(A)	58,4	60,9	60,5	60,6	61,2	61,3	61,7	62,1	62,8
UltraQuiet version (4)	dB(A)	53,7	57,9	56,9	57,3	58,7	58,8	59,2	59,9	60,7
Dimensions										
Height (EC fans) (5)	mm	2531	2531	2531	2531	2531	2531	2531	2531	2531
Depth	mm	4985	4985	6415	6415	9110	9110	10540	10540	11970
Width	mm	2200	2200	2200	2200	2200	2200	2200	2200	2200

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
   Unit equipped with EC fans
2. Data refer to total absorbed power (compressors and fans)
   Unit equipped with EC fans
3. Integrated partial load value
   Unit equipped with EC fans
4. Data refer to 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 and with different configurations, noise values may vary
   Unit equipped with EC fans
5. Data refer to unit without chimneys
   Unit equipped with EC fans

a. Seasonal Energy Efficiency Ratio calculated at 7/12°C water temperatures according to Regulation EU 2016/2281

b. Seasonal Energy Efficiency Ratio calculated at 18/23°C water temperatures according to Regulation EU 2016/2281

c. Seasonal Energy Performance Ratio according to Regulation EU 2016/2281

*. Data refer to units equipped with EC fans. Data in different configurations are available in Schneider Electric specific technical literature

**. Unit not compliant with Ecodesign Regulation EU 2016/2281. Please refer to Schneider Electric for further details

Construction options

- Double power supply with automatic integrated management on the active line and integrated condenser for control board.
- Fans with electronic commutated motors (EC).
- Power phase correction capacitors.
- Subcooling Economizer.
- Operation possible with external temperature up to 50 °C at full load.
- Low external temperature: unit works down to -20 °C.
- Quite version with soundproof casing and vibration absorbers for compressors.
- UltraQuiet version with soundproof casing, vibration absorbers for compressors and fan speed reduction.
- Noise reduction chimneys for Quiet version.
- 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).
- Power meter.
- Integrated hydronic system with one or two (1+1 standby) inverter-driven circulation pumps and pressure transducers.
- Antifreeze protection on evaporator and pump group.
- Condensing coils equipped with metal safety grilles and filters.
- Coil manifolds protection panels.
- Anti-corrosion protection treatment for air-side coils

For external accessories see page 76

BREC

Range

Cooling capacity: 300 ÷ 1,000 kW

Available versions

- Basic
- Quiet
- UltraQuiet

Refrigerant R1234ze
Double screw compressors – optimized solution for R1234ze

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 located in the electrical board, discharge shut-off valve, oil heaters, and anti-vibration supports.
- Environmental friendly refrigerant R1234ze(E) featured by low global warming potential GWP<1.
- Two refrigerant circuits conforming to Pressure equipment Directive 2014/68/EU (PED) in copper tubes including: compressor discharge shut-off valve, filter dryer, liquid sight glass, electronic expansion valve managed by the control system, solenoid valve on the liquid line, high and low pressure transducers and high and low pressure gauges.
- Operation possible with external temperature up to 50 °C at full load and water temperature up 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 and integrated subcooling circuit.
- 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 Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) 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 and thermal protection for compressors.
- Sequence phase, minimum and maximum power supply monitoring.
- Microprocessor control system including:
  - Human Machine Interface (HMI) with external display and accessible via an access hatch
  - Outlet chilled water temperature regulation by means of an exclusive PID algorithm
  - Modulating condensation pressure control
  - Electronic expansion valve managed by the control system
  - Indirect and direct refrigerant charge monitoring
  - Monitoring of the absorbed current and checking of possible malfunctions
  - Advanced antifreeze protection on evaporator
  - External motorized isolating valve management
  - Anti-freeze protection
  - Compressor timing and protection
  - Unloading to protect unit operation even with temperatures which exceed the maximum
  - 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 to connect more than one unit to the local area network
  - Integrated USB connection for data downloading
  - Integrated RS4805 serial card data downloading
  - Integrated clock card.
- Microprocessor control system, in addition, allows:
  - Limiting of absorbed current on preset value or external signal
  - Quick restart procedure to reach total cooling capacity within two or three minutes according to the configuration
  - 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										
BREC Model		**1832A**	**2232A**	**2532A**	**2832A**	**3232A**	**3632A**	**4232A**	**4832A**	**5632A**
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	14
Basic or Quiet version										
Cooling capacity (1)	kW	317	396	457	529	648	703	795	874	934
Absorbed power (1)(2)	kW	98	120	139	161	194	209	243	267	291
EER (1)(2)		3,23	3,31	3,29	3,28	3,34	3,37	3,27	3,27	3,21
IPLV (3)		4,61	4,84	4,66	4,62	4,83	5,09	4,53	4,38	4,43
SEER low temperature (a)	%	161,7	172,7	166,4	165,9	176,5	181,2	166,8	163,3	163,7
SEER mid temperature (b)	%	183,5	191,7	182,8	180,5	197,3	203,4	179,5	178,6	183,1
SEPR (c)	-	4,97	5,34	5,04	5,02	5,24	5,59	**	**	**
UltraQuiet version										
Cooling capacity (1)	kW	299	379	432	493	608	656	745	813	871
Absorbed power (1)(2)	kW	96	117	137	163	195	216	243	270	294
EER (1)(2)		3,11	3,23	3,15	3,04	3,11	3,04	3,06	3,01	2,96
IPLV (3)		4,60	4,84	4,65	4,61	4,81	5,04	4,53	4,37	4,43
SEER low temperature (a)	%	161,1	172,2	165,5	166,3	177,2	180,6	166	161,4	163,3
SEER mid temperature (b)	%	194,7	190,3	193,7	187,9	210	213,4	187,3	183,3	190,6
SEPR (c)	-	5,09	5,32	5,06	5,02	5,27	5,53	**	**	**
Noise Pressure Levels										
Basic version (4)	dB(A)	62,8	65,8	65,2	65,4	66,2	66,3	66,7	67,2	68,0
Quiet version (4)	dB(A)	61,9	63,8	63,5	63,6	63,9	63,9	64,2	64,5	65,2
Quiet version with chimneys (4)	dB(A)	58,4	60,9	60,5	60,6	61,2	61,3	61,7	62,1	62,8
UltraQuiet version (4)	dB(A)	53,7	57,9	56,9	57,3	58,7	58,8	59,2	59,9	60,7
Dimensions										
Height (EC fans) (5)	mm	2531	2531	2531	2531	2531	2531	2531	2531	2531
Depth	mm	5005	6435	6435	6435	9110	9110	10540	10540	11970
Width	mm	2200	2200	2200	2200	2200	2200	2200	2200	2200

Construction options

- Double power supply with automatic integrated management on the active line and integrated condenser for control board.
- Fans with electronic commutated motors (EC).
- Low external temperature: unit works down to -20 °C.
- Quiet version with soundproof casing fitted with refrigerant leakage system and ventilation system and vibration absorbers for compressors.
- UltraQuiet version with soundproof soundproof casing fitted with refrigerant leakage system and ventilation system, vibration absorbers for compressors and fan speed reduction.
- Noise reduction chimneys for Quiet version.
- Suction shut-off valves on compressor.
- Power phase capacitors for compressors.
- Power meter.
- Integrated hydronic system with one or two circulation pumps (1 + 1 standby).
- Integrated hydronic system with one or two inverter-driven circulation pumps (1+1 standby) and pressure transducers.
- Antifreeze protection on evaporator and pump group.
- Condensing coils equipped with metal safety grilles and filters.
- Coil manifolds protection panels.
- Anti-corrosion protection treatment for air-side coils

For external accessories see page 76

1. Data refer to nominal conditions: water temperature 12/7 °C, external temperature 35 °C glycol 0%, refrigerant R1234ze, fouling factor 0.0 m2 °C/W
   Unit equipped with EC fans
2. Data refer to total absorbed power (compressors and fans)
   Unit equipped with EC fans
3. Integrated partial load value
   Unit equipped with EC fans
4. Data refer to 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 and with different configurations, noise values may vary
   Unit equipped with EC fans
5. Data refer to unit without chimneys
   Unit equipped with EC fans

a. Seasonal Energy Efficiency Ratio calculated at 7/12°C water temperatures according to Regulation EU 2016/2281

b. Seasonal Energy Efficiency Ratio calculated at 18/23°C water temperatures according to Regulation EU 2016/2281

c. Seasonal Energy Performance Ratio according to Regulation EU 2016/2281

*. Data refer to units equipped with EC fans. Data in different configurations are available in Schneider Electric specific technical literature

**. Unit not compliant with Ecodesign Regulation EU 2016/2281. Please refer to Schneider Electric for further details

BCEC

Range

Cooling capacity: 300 ÷ 1,200 kW

Available versions

- Quiet
- UltraQuiet

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 quiet version.
- Coil manifold protection panels.
- Single refrigerant circuit conforming to Pressure Equipment Directive 2014/68/EU (PED) 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.
- The refrigerant circuit is covered by acoustic soundproofing insulation for noise reduction.
- 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 coils with aluminum fins, internally grooved copper tubes and integrated subcooling circuit.
- 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 Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) 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
  - Direct decoding of all the compressor signals on the human interface to simplify service operations
  - 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
  - Fast restart procedure
  - 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.	6	6	8	10	12	14	16
Quiet version								
Cooling capacity (1)	kW	313	415	604	638	842	943	1252
Absorbed power (1)(2)	kW	96,8	121,4	183,3	189,3	243,2	281,5	362,8
EER (1)(2)		3,24	3,42	3,30	3,38	3,47	3,35	3,46
IPLV (3)		6,02	6,28	6,08	6,37	6,73	6,24	6,50
SEER low temperature (a)	%	220,7	213,4	211,1	220,3	219,8	222,6	219,6
SEER mid temperature (b)	%	260,7	257,1	228,6	238,2	249,6	255	260,6
SEPR (c)	-	6,6	7,55	6,63	6,62	7,59	6,63	7,88
UltraQuiet version								
Cooling capacity (1)	kW	291	382	541	589	773	862	1136
Absorbed power (1)(2)	kW	88,5	117,3	167,5	174,2	234,0	258,4	351,7
EER (1)(2)		3,29	3,26	3,23	3,38	3,30	3,34	3,23
IPLV (4)		6,28	6,23	5,91	5,99	6,60	6,42	6,65
SEER low temperature (a)	%	222,2	213,2	216,7	226,6	221,9	224,9	215,3
SEER mid temperature (b)	%	260,2	254,3	228,5	237,7	247,4	252,9	257,4
SEPR (c)	-	6,99	7,85	7,03	7,16	7,91	7,13	7,87
Noise Pressure Levels								
Quiet version (4)	dB(A)	59,6	59,8	60,4	60,8	61,2	61,4	61,7
Quiet version with chimneys (4)	dB(A)	55,9	56,2	56,9	57,2	57,7	57,8	58,2
UltraQuiet version (4)	dB(A)	51,8	52,9	53,5	53,5	54,4	54,2	55,1
Dimensions								
Height (EC fans) (5)	mm	2531	2531	2531	2531	2531	2531	2531
Depth	mm	5000	5000	6430	7860	9290	10720	12150
Width	mm	2200	2200	2200	2200	2200	2200	2200

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
   Unit equipped with EC fans
2. Data refer to total absorbed power (compressors and fans)
   Unit equipped with EC fans
3. Integrated partial load value
   Unit equipped with EC fans
4. Data refer to 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 and with different configurations, noise values may vary
   Unit equipped with EC fans
5. Data refer to unit without chimneys
   Unit equipped with EC fans

a. Seasonal Energy Efficiency Ratio calculated at 7/12°C water temperatures according to Regulation EU 2016/2281

b. Seasonal Energy Efficiency Ratio calculated at 18/23°C water temperatures according to Regulation EU 2016/2281

c. Seasonal Energy Performance Ratio according to Regulation EU 2016/2281

*. Data refer to units equipped with EC fans. Data in different configurations are available in Schneider Electric specific technical literature

Construction options

- Double power supply with automatic integrated management on the active line and integrated condenser for control. Quick restart included (full load capacity within 3 minutes).
- Separate power supply for control board and heaters operation. Quick restart included (full load capacity within 3 minutes).
- 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).
- Soundproof enclosures for compressors and fan speed reduction (UltraQuiet version).
- Low external temperature option: unit can operate down to -20 °C external temperature.
- Modularity bypass valve designed to handle low load conditions.
- Noise reduction chimneys for Quiet version.
- Integrated hydronic system with one or two circulation pumps.
- Integrated hydronic system with one or two (1+1 standby) inverter-driven circulation pumps and pressure transducers.
- Antifreeze protection on evaporator and pump/s group.
- Condensing coils equipped with metal safety grilles and filters.
- Anti-corrosion protection treatment for air-side coils.

For external accessories see page 76

ERAF

Range

Cooling capacity: 50 ÷ 120 kW

Available versions

- Basic
- Quiet
- UltraQuiet

Refrigerant R410A
Scroll compressors

Standard feature

- 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, discharge gas thermal protection (ERAH), phase sequence control, safety internal valve, non-return discharge valve, oil level glass, anti-vibration supports.
- Compressor casing for noise reduction, safe operation, and protection
- Single or double (**22A model) refrigerant circuit* conforming to Pressure Equipment Directive 2014/68/EU (PED) in copper tubing including filter dryer, liquid sight glass, thermostatic valve with external equalization, high and low pressure switches, and high and low 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.
- 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.
- 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 with fan speed regulation.
- Electrical panel conforming to Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) protection grade IP54 with maximum and minimum internal temperature control, auxiliary transformer, general auxiliary cut-off switch, magneto-thermal protection switches with trip alarm signal on compressors, magneto thermal protection for fan speed control protection, safe-motor for pumps protection and remote control cut-off switches.
- Electrical board an embeddedcontact for an externally fitted 230V isolating motorized valve.
- Phase sequence control and phase presence monitoring, minimum / maximum voltage protection and correct phase balancing.
- Anti-freeze heaters
- 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 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
  - Main electrical data acquisition and management
  - Integrated clock card.
  - 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)

** 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	400/3/50									
Compressors/circuits	nr. x mod.	2/1	2/1	2/1	2/1	2/1	2/2	2/1	2/2	2/1	2/2
Evaporator	nr. x mod.	1 x brazed plate									
Fans	nr.	2	2	2	3	3	3	3	3	3	3
ERAF — Basic or Quiet version											
Cooling capacity (1)	kW	49	58	68	77	85	86	102	101	114	115
Absorbed power (1)(2)	kW	15,7	19,6	21,4	24,6	28,7	28,8	32,3	32,3	37,9	38,0
EER (1)(2)		3,12	2,95	3,17	3,13	2,96	2,98	3,15	3,12	3,00	3,02
Free-cooling capacity (3)	kW	36	38	46	53	55	55	66	66	66	66
SEER mid temperature (b)	%	169,7	167,7	180,1	179,7	172,3	168,6	191,6	175,2	184	172,4
SEPR (c)	-	5,46	5,33	5,66	5,53	5,31	4,73	5,92	4,91	5,81	4,94
ERAF — UltraQuiet version											
Cooling capacity (1)	kW	47	56	66	75	82	83	97	97	109	110
Absorbed power (1)(2)	kW	15,7	20,0	22,0	24,8	29,4	29,4	33,3	33,3	39,8	39,9
EER (1)(2)		2,99	2,80	3,00	3,02	2,78	2,82	2,91	2,91	2,73	2,75
Free-cooling capacity (3)	kW	36	38	46	53	54	54	66	66	66	66
SEER mid temperature (b)	%	166,2	160,7	172,9	175,7	165,9	161,5	182,7	166,1	171	160,4
SEPR (c)	-	5,52	5,31	5,63	5,56	5,31	4,71	5,85	4,85	5,66	4,81
Noise pressure levels											
Basic version (4)	dB(A)	50.2	50.2	54.3	54.3	54.3	54.3	56.2	56.2	56.7	56.7
Quiet version (4)	dB(A)	49.9	50.0	54.1	54.1	54.1	54.1	54.6	54.6	54.8	54.8
UltraQuiet version (4)	dB(A)	44.9	45.1	46.7	46.7	46.7	46.7	49.2	49.2	49.9	49.9
Dimensions											
Height (EC fans)	mm	1600	1600	1600	1600	1600	1600	1910	1910	1910	1910
Depth	mm	1214	1214	1219	1219	1219	1184	1272	1184	1272	1184
Width	mm	2026	2026	2821	2821	2821	2804	3088	3073	3088	3073

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

a. Seasonal Energy Efficiency Ratio calculated at 7/12°C water temperatures according to Regulation EU 2016/2281

b. Seasonal Energy Efficiency Ratio calculated at 18/23°C water temperatures according to Regulation EU 2016/2281

c. Seasonal Energy Performance Ratio according to Regulation EU 2016/2281

*. Data refer to units equipped with EC fans. Data in different configuratons are available in Schneder Electric specific technical literature

**. Unit not compliant with Ecodesign Regulation EU 2016/2281. Please refer to Schneider Electric for further details

Construction options

- Quiet version with compressor soundproof casing.
- UltraQuiet version with fan speed reduction and compressor soundproof casing.
- Double power supply with automatic integrated management on the active line.
- Acoustic-Composite fans with electronic commutated motors (EC).
- Partial condensation heat recovery.
- Electronic expansion valve (**21A models only)
- Intelligent free-cooling.
- Integrated hydronic system with one or two circulation pumps.
- Integrated hydronic system with one inverter driven circulation pump.
- Internal water tank.
- Internal water tank including a pump to manage the primary circuit.
- Discharge shut-off valves
- Power factor improvement compressors.
- Compressor soft start.
- Cataphoresis treatment for the condensing coils.
- Modification of the set point by external 0 V – 10 V signal

For external accessories see page 76

[Variable speed air-cooled water chillers with free-cooling system for outdoor installations]

ISAF

Range

Cooling capacity: 60 ÷ 120 kW

Available versions

- Quiet
- UltraQuiet

Refrigerant R410A
Inverter-driven 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.
- Inverter-driven hermetic Scroll compressor, equipped with inverter speed control, oil by-pass valve and line, integrated soft start, power factor correction condenser, integrated thermal protection, crankcase heaters and inverter with oil heating function, anti-vibration supports, and an inverter driver with IP54 protection grade coupled with a specific compressor and positioned in a dedicated housing compartment.
- Compressor soundproof casing for noise reduction, safe operation, and protection
- Single refrigerant circuit conforming to Pressure Equipment Directive 2014/68/EU (PED) in copper tubing including filter dryer, liquid sight glass, thermostatic valve with external equalization, high and low pressure switches, and high and low pressure transducers.
- Environmentally friendly refrigerant R410A.
- Electronic expansion valve
- 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.
- 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.
- 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 with fan speed regulation.
- Electrical panel conforming to Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) protection grade IP54 with maximum and minimum internal temperature control, auxiliary transformer, general auxiliary cut-off switch, magneto-thermal protection switches with trip alarm signal on compressors, magneto thermal protection for fan speed control protection, safe-motor for pumps protection and remote control cut-off switches. Electrical board equipped an embedded contact for an externally fitted 230V isolating motorized valve.
- Phase sequence control and phase presence monitoring, minimum / maximum voltage protection and correct phase balancing.
- Anti-freeze heaters
- 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 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
  - Main electrical data acquisition and management
  - Integrated clock card.
  - 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				
ISAF Model		**0621A**	**0921A**	**1221A**
Power supply	V/ph/Hz	400/3/50		
Compressors/circuits	nr. x mod.	2/1	2/1	2/1
Evaporator	nr. x mod.	1 x brazed plate		
Fans	nr.	2	3	3
ISAF — Quiet version				
Cooling capacity (1)	kW	61	88	120
Absorbed power (1)(2)	kW	20,1	28,0	38,9
EER (1)(2)		3,08	3,14	3,08
Free-cooling capacity (3)	kW	38	53	71
SEER low temperature (a)	%	152,2	158,3	167,3
SEER mid temperature (b)	%	177,2	179,4	195,8
SEPR (c)	-	5,17	5,34	5,75
ISAF — UltraQuiet version				
Cooling capacity (1)	kW	59	84	115
Absorbed power (1)(2)	kW	20,7	28,6	40,0
EER (1)(2)		2,84	2,93	2,88
Free-cooling capacity (3)	kW	37	53	71
SEER low temperature (a)	%	156	161,6	171,6
SEER mid temperature (b)	%	180,9	184,9	200,5
SEPR (c)	-	5,27	5,46	5,84
ISAF Noise Pressure Levels				
Quiet version (4)	dB(A)	53.9	56.1	57.0
UltraQuiet version (4)	dB(A)	49.0	50.9	53.0
ISAF Dimensions				
Height (EC fans)	mm	1600	1600	1910
Depth	mm	1214	1214	1276
Width	mm	2009	2804	3067

1. Data refer to nominal conditions: water temperature 15/10 °C, external temperature 35 °C, glycol 20%, refrigerant R410A, fouling factor 0.0 m2 °C/W
   Unit equipped with EC fans
2. Data refer to total absorbed power (compressors and fans)
   Unit equipped with EC 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
   Unit equipped with EC fans
4. Data refer to 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 and with different configurations, noise values may vary
   Unit equipped with EC fans

a. Seasonal Energy Efficiency Ratio calculated at 7/12°C water temperatures according to Regulation EU 2016/2281

b. Seasonal Energy Efficiency Ratio calculated at 18/23°C water temperatures according to Regulation EU 2016/2281

c. Seasonal Energy Performance Ratio according to Regulation EU 2016/2281

*. Data refer to units equipped with EC fans. Data in different configurations are available in Schneider Electric specific technical literature

Construction options

- UltraQuiet version with fan speed reduction and compressor soundproof casing.
- Double power supply with automatic integrated management on the active line.
- Acoustic-Composite fans with electronic commutated motors (EC).
- Partial condensation heat recovery.
- Intelligent free-cooling.
- Integrated hydronic system with one or two circulation pumps.
- Integrated hydronic system with one inverterdriven circulation pump.
- Discharge shut-off valves.
- Cataphoresis treatment for the condensing coils.
- Modification of the set point by external 0 V – 10 V signal.

For external accessories see page 76

[Air-cooled water chillers with free-cooling system for outdoor installations]

TRAF

Range

Cooling capacity: 120 ÷ 420 kW

Available versions

- Basic
- UltraQuiet

Refrigerant R410A
Scroll 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).
- 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 **21A1) or double (models **42A1) refrigerant circuit conforming to Pressure Equipment Directive 2014/68/EU (PED) 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.
- 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 condensing coils:
  - micro-channel condensing coils for TRAF models up to 260kW (1221A1 – 2842A1).
  - coils with aluminum fins and mechanically-expanded copper tubes for TRAF models of 300kW and higher (3642A1 – 4142A1).
- Free-cooling air coils with aluminum 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.
- 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 Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) with maximum/minimum internal temperature control, auxiliary transformer, general auxiliary cut-off switch, electric bars distribution for power supply, thermos-magnetic protection for compressors, fans and auxiliaries, safe-motor for pumps protection and remote control cut-off switches. The electrical board is equipped with embedded contact for an externally fitted 230V isolating motorized valve.
- 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:
  - 7inch. touch screen display interface
  - outlet chilled water / hot water (TRAH) 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
  - 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 on the touch screen display for data downloading/firmware uploading
  - Integrated SNMP, Modbus TCP/IP communication protocol
  - Main electrical data acquisition and management
  - Integrated 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
  - Compatibility with BMS by means the main protocols
  - Full integration into a Data Center Infrastructure Management (DCIM) System
  - Set-point variation based on external temperature or signal (0-10V, 4-20mA or 0-20mA).

Technical Data											
TRAF Model		**1221A1**	**1421A1**	**1742A1**	**2042A1**	**2342A1**	**2642A1**	**2842A1**	**3642A1**	**4042A1**	**4142A1**
Power supply	V/ph/Hz	400/3/50									
Compressors/circuits	nr. x mod.	2/1	2/1	4/2	4/2	4/2	4/2	4/2	4/2	4/2	4/2
Evaporator	nr. x mod.	1 x brazed plate									
Fans	nr.	2	2	3	3	4	4	4	5	6	6
TRAF - Basic version											
Cooling capacity (1)	kW	127,7	138,9	176,2	198,3	229,8	253,2	275,3	329,2	373,6	406,4
Absorbed power (1)(2)	kW	41,3	48,2	52,8	62,7	70,1	82,6	96,5	107,3	122,6	137,4
EER (1)(2)		3,09	2,88	3,34	3,16	3,28	3,07	2,85	3,07	3,05	2,96
EER in free-cooling mode (3)(4)	°C	9,29	9,20	10,00	9,37	12,51	12,22	9,86	10,33	10,77	9,74
SEER low temperature (a)	%	178,2	176	182,2	175,3	177	178,8	177,1	182,6	181,1	179,3
SEER mid temperature (b)	%	218,3	214,9	203,2	194	194,8	207,8	208,4	210,7	208,6	209,6
SEPR (c)	-	6,04	5,99	6	5,86	6,16	6,32	6,34	6,35	6,28	6,14
TRAF - UltraQuiet version											
Cooling capacity (1)	kW	119,4	131,1	166,5	186,3	216,8	235,5	259,4	307,8	350,7	382,9
Absorbed power (1)(2)	kW	43,4	50,8	54,1	65,2	72,0	87,4	102,1	113,9	128,5	144,8
EER (1)(2)		2,75	2,58	3,08	2,86	3,01	2,70	2,54	2,70	2,73	2,64
EER in free-cooling mode (3)(4)	°C	9,42	9,33	10,11	9,27	13,03	11,04	9,53	10,27	10,56	9,38
SEER low temperature (a)	%	180,1	179,4	182,4	174,5	176,8	177,9	174,8	181,4	180,5	176,9
SEER mid temperature (b)	%	213,5	207,5	205,3	193,3	196,5	205,7	202,3	208,1	206,7	203,8
SEPR (c)	-	6,32	6,09	6,16	5,92	6,35	6,42	6,33	6,43	6,37	6,13
TRAF Noise Pressure Levels											
Basic version (5)	dB(A)	55,9	56,5	56,9	57,1	58,6	59,2	59,2	60,6	61,1	61,1
UltraQuiet version (5)	dB(A)	52,0	52,8	52,6	52,9	54,2	55,3	55,8	56,9	57,4	57,5
TRAF Dimensions											
Height (EC fans)	mm	2236	2236	2236	2236	2236	2236	2236	2156	2156	2156
Depth	mm	3162	3162	4612	4612	5562	5562	5562	5730	5730	5730
Width	mm	1151	1151	1151	1151	1151	1151	1151	2204	2204	2204

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

a. Seasonal Energy Efficiency Ratio calculated at 7/12°C water temperatures according to Regulation EU 2016/2281

b. Seasonal Energy Efficiency Ratio calculated at 18/23°C water temperatures according to Regulation EU 2016/2281

c. Seasonal Energy Performance Ratio according to Regulation EU 2016/2281

*. Data refer to units equipped with EC fans. Data in different configurations are available in Schneider Electric specific technical literature

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 separate power supply 230/3/50Hz.
- Fans with electronic commutated motors (EC).
- Intelligent free-cooling option (1+1 and 2+1) to leverage on the stand-by unit to increase the free-cooling capacity.
- Glycol free arrangement to avoid glycol inside the primary circuit.
- UltraQuiet version with soundproof casing, vibration absorbers for compressors and fan speed reduction.
- Electronic expansion valve (EEV)
- Integrated hydronic system with one or two circulation pumps (1 + 1 standby).
- Integrated hydronic system with one or two inverter-driven circulation pumps (1+1 standby) and pressure transducers.
- Internal water tank.
- Partial condensation heat recovery.
- Antifreeze protection on evaporator and pump/s group.
- Suction shut-off valves on compressor.
- Power phase correction capacitors.
- Soft starter for compressor to reduce the starting current.
- Power meter for a continuous measurement of the unit power consumption and communication to the BMS.
- Refrigerant leak monitoring system that generates alarms in the event of leakages in the compressor housing.
- Adiabatic pre-cooling system (3642A1-4042A1-4142A1 models) composed by spray nozzles, pumping station and polyurethanic protection panels.
- Air-side coils equipped with metal filters and protection grilles.
- Later metal grilles for unit protection.
- Anti-corrosion protection treatment for air-side coils.

** Standard feature for TRAH models.*

For external accessories see page 76

[Variable speed air-cooled water chillers with free-cooling system for outdoor installations]

TSAF

Range

Cooling capacity: 130 ÷ 350 kW

Available versions

- Quiet
- UltraQuiet

Refrigerant R410A
Inverter-driven scroll 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).
- Access panel to the unit equipped with handles and fast screws.
- Between two to four hermetic scroll compressors (one inverter driven) with oil by-pass valve and line, integrated soft start, power factor correction condenser, integrated thermal protection and inverter with oil heating function, anti-vibration supports, crankcase heaters and an inverter driver with IP54 protection grade coupled with a specific compressor and positioned in a dedicated housing compartment.
- Compressors soundproofed protective housing for noise impact reduction and safe operation and protection (Quiet version).
- Single (model 1521A) or double (models **42A) refrigerant circuit conforming to Pressure Equipment Directive 2014/68/EU (PED) with copper tubing including: filter dryer, liquid sight glass, electronic expansion valve, solenoid valve on the liquid line, water-flow differential pressure switch and high and low pressure transducers.
- Possibility of operation with external temperatures down to -25 °C in free-cooling mode.
- Environmentally friendly refrigerant R410A.
- Electronic expansion valve (EEV) entirely managed by the control system.
- Water side brazed plate heat exchanger in stainless steel insulated with closed cell expanded polyurethane.
- Water flow differential pressure switch.
- Air side condensing coils:
  - micro-channel condensing coils for TSAF models up to 220kW (1521A – 2642A)
  - coils with aluminum fins and mechanically-expanded copper tubes for TSAF models of 280kW and higher (3642A – 4042A).
- Free-cooling air coils with aluminum 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.
- Acousti-Composite fans with electronic commutated motors (EC): 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 Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) with maximum/minimum internal temperature control, auxiliary transformer, general auxiliary cut-off switch, electric bars distribution for power supply, thermos-magnetic protection for compressors, fans and auxiliaries, safe-motor for pumps protection and remote control cut-off switches. The electrical board is equipped with embedded contact for an externally fitted 230V isolating motorized valve.
- 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:
  - 7inch. touch screen display interface
  - outlet chilled water temperature regulation by means of an exclusive PID algorithm
  - Free-cooling and intelligent free-cooling management
  - Mixed free-cooling operation
  - Production of chilled water down 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 on the touch screen display for data downloading/firmware uploading
  - Integrated SNMP, Modbus TCP/IP communication protocol
  - Main electrical data acquisition and management
  - Integrated 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
  - Compatibility with BMS by means the main protocols
  - Full integration into a Data Center Infrastructure Management (DCIM) System
  - Set-point variation based on external temperature or signal (0-10V, 4-20mA or 0-20mA).

Technical Data						
TSAF Model		**1521A**	**2042A**	**2642A**	**3642A**	**4042A**
Power supply	V/ph/Hz	400/3/50				
Compressors/circuits	nr. x mod.	2/1	4/2	4/2	4/2	4/2
Evaporator	nr. x mod.	1 x brazed plate				
Fans	nr.	2	3	4	5	6
Quiet version						
Cooling capacity (1)	kW	136,8	162,3	219	308,5	344
Absorbed power (1)(2)	kW	39,7	47,3	64,3	90,8	101,7
EER (1)(2)		3,44	3,43	3,41	3,40	3,38
EER in free-cooling mode (3)(4)	°C	10,77	10,64	13,58	12,35	11,57
SEER low temperature (a)	%	191,3	179,4	179,4	182,7	180,4
SEER mid temperature (b)	%	226,6	207,9	206,4	207,8	206
SEPR (c)	-	6,21	5,8	6,34	6,21	6,01
UltraQuiet version						
Cooling capacity (1)	kW	128,3	154,2	206,8	289,4	320,8
Absorbed power (1)(2)	kW	41,2	47,8	65,6	93,6	104,4
EER (1)(2)		3,11	3,23	3,15	3,09	3,07
EER in free-cooling mode (3)(4)	°C	10,85	10,58	13,79	11,92	11,12
SEER low temperature (a)	%	190,6	180	180,1	183,1	181,1
SEER mid temperature (b)	%	225,5	210,6	208,8	209,2	207,6
SEPR (c)	-	6,3	5,98	6,53	6,33	6,17
Noise Pressure Levels						
Quiet version (5)	dB(A)	57,3	56,9	59,8	60,4	60,8
UltraQuiet version (5)	dB(A)	53,5	53,9	54,8	55,8	56,2
Dimensions						
Height (EC fans)	mm	2236	2236	2236	2156	2156
Depth	mm	4112	4612	5562	5730	5730
Width	mm	1151	1151	1151	2204	2204

Note: Refer to the Schneider Electric selection software for data related to units equipped with AC fans

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

a. Seasonal Energy Efficiency Ratio calculated at 7/12°C water temperatures according to Regulation EU 2016/2281

b. Seasonal Energy Efficiency Ratio calculated at 18/23°C water temperatures according to Regulation EU 2016/2281

c. Seasonal Energy Performance Ratio according to Regulation EU 2016/2281

*. Data refer to units equipped with EC fans. Data in different configurations are available in Schneider Electric specific technical literature

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 separate power supply 230/3/50Hz.
- Intelligent free-cooling option (1+1 and 2+1) to leverage on the stand-by unit to increase the free-cooling capacity.
- Glycol free arrangement to avoid glycol inside the primary circuit.
- UltraQuiet version with soundproof casing, vibration absorbers for compressors and fan speed reduction.
- Integrated hydronic system with one or two circulation pumps (1+1 standby), or one or two inverter-driven circulation pumps (1+1 standby) and pressure transducer.
- Internal water tank (only TSAC3642A-4042A models).
- Partial condensation heat recovery.
- Antifreeze protection on evaporator and pump/s group.
- Suction shut-off valves on compressor.
- Power phase correction capacitors.
- Soft starter for compressor to reduce the starting current.
- Power meter for a continuous measurement of the unit power consumption and communication to the BMS.
- Refrigerant leak monitoring system that generates alarms in the event of leakages in the compressor housing.
- Adiabatic pre-cooling system (3642A-4042A models) composed by spray nozzles, pumping station and polyurethanic protection panels.
- Air-side coils equipped with metal filters and protection grilles.
- Later metal grilles for unit protection.
- Anti-corrosion protection treatment for air-side coils

For external accessories see page 76

BREF

Range

Cooling capacity: 400 ÷ 700 kW

Available versions

- Basic
- Quiet
- UltraQuiet

Refrigerant R134a
Double screw compressors
Basic offer

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.
- Operation possible with external temperature up to 50 °C at full load.
- Two refrigerant circuits conforming to Pressure Equipment Directive 2014/68/EU (PED) 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, internally grooved copper tubes and integrated subcooling circuit.
- 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 Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) with general cut-off switch, power supply electic 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 including:
  - Human Machine Interface (HMI) with external display and accessible via an access hatch
  - Outlet chilled water temperature regulation by means of an exclusive PID algorithm
  - Electronic expansion valve managed by the control system
  - Refrigerant charge monitoring
  - Monitoring of the absorbed current and checking of possible malfunctions
  - Advanced antifreeze protection on evaporator
  - External motorized isolating valve management
  - Anti-freeze protection
  - Compressor timing and protection
  - Pump rotation (if present) on a time 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 RS4805 serial card for data downloading
  - Integrated clock card.
- Microprocessor control system, in addition, allows:
  - Limiting of absorbed current on preset value or external signal
  - Quick restart procedure to reach total cooling capacity within two or three minutes according to unit configuration
  - 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					
BREF Model		**1802A**	**2202A**	**2502A**	**2802A**
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
Basic or Quiet version					
Cooling capacity (1)	kW	477	545	576	689
Absorbed power (1)(2)	kW	149	165	178	221
EER (1)(2)		3,12	3,31	3,24	3,12
Free-cooling capacity (3)	kW	272	299	312	386
SEER mid temperature (b)	%	174,9	180,1	178,1	180,1
SEPR (c)	-	5,61	5,68	5,64	5,78
Basic or Quiet version with subcooling economizer					
Cooling capacity (1)	kW	512	582	618	743
Absorbed power (1)(2)	kW	161	181	193	251
EER (1)(2)		3,19	3,22	3,21	2,97
Free-cooling capacity (3)	kW	286	313	327	409
SEER mid temperature (b)	%	167,3	172,7	171,4	172,9
SEPR (c)	-	5,67	5,63	5,6	5,77
UltraQuiet version					
Cooling capacity (1)	kW	446	508	540	653
Absorbed power (1)(2)	kW	155	169	183	228
EER (1)(2)		2,88	3,01	2,96	2,87
Free-cooling capacity (3)	kW	262	282	295	369
SEER mid temperature (b)	%	169,8	179,4	177	172,3
SEPR (c)	-	5,57	5,7	5,61	5,64
UltraQuiet version with subcooling economizer					
Cooling capacity (1)	kW	491	557	593	720
Absorbed power (1)(2)	kW	171	191	203	261
EER (1)(2)		2,88	2,92	2,93	2,76
Free-cooling capacity (3)	kW	278	303	316	391
SEER mid temperature (b)	%	161,1	170,9	168,6	165,2
SEPR (c)	-	5,54	5,68	5,59	5,51
Noise Pressure Level					
Basic version (4)	dB(A)	63,2	64,1	63,8	64,2
Quiet version (4)	dB(A)	62,1	63,2	63,1	63,2
Quiet version with chimneys (4)	dB(A)	54,4	55,0	54,4	55,1
UltraQuiet version (4)	dB(A)	58,7	59,7	59,5	59,7
Dimensions					
Height (EC fans) (5)	mm	2531	2531	2531	2531
Depth	mm	5005	6435	6435	6435
Width	mm	2200	2200	2200	2200

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
   Unit equipped with EC fans
2. Data refer to total absorbed power (compressors and fans)
   Unit equipped with EC 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
   Unit equipped with EC fans
4. Data refer to free field at 10 meters from the unit operating without pump at minal conditions, with fans at nominal conditions, coil side, Q=2 directional factor. At different conditions and with different configurations, noise values may vary
   Unit equipped with EC fans
5. Data refer to unit without chimneys
   Unit equipped with EC fans

b. Seasonal Energy Efficiency Ratio calculated at 18/23°C water temperatures according to Regulation EU 2016/2281

c. Seasonal Energy Performance Ratio according to Regulation EU 2016/2281

*. Data refer to units equipped with EC fans. Data in different configurations are available in Schneider Electric specific technical literature

**. Unit not compliant with Ecodesign Regulation EU 2016/2281. Please refer to Schneider Electric for further details

Construction options

- Double power supply with automatic integrated management on the active line and integrated condenser for control board.
- Fans with electronic commutated motors (EC).
- Power phase correction capacitors.
- Subcooling Economizer.
- Quite version with soundproof casing and vibration absorbers for compressors.
- UltraQuiet version with soundproof casing, vibration absorbers for compressors and fan speed reduction.
- Noise reduction chimneys for Quiet version.
- Intelligent free-cooling for an increase in efficiency with unit in standby.
- Free-cooling operation down to -40°C.
- Glycol-free version*.
- Partial condensation heat recovery.
- Suction shut-off valves on compressor.
- Power meter.
- Integrated hydronic system with one or two circulation pumps (1+1 standby).
- Integrated hydronic system with one or two (1+1 standby) inverter-driven circulation pumps and pressure transducers.
- Condensing and free-cooling coils equipped with metal safety grilles and filters.
- Coil manifolds protection panels.
- Anti-corrosion protection treatment for air-side coils.

** On request*

For external accessories see page 76

BREF

Range

Cooling capacity: 400 ÷ 1,300 kW

Available versions

- Basic
- Quiet
- UltraQuiet

Refrigerant R134a
Double screw compressors
Premium offer

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 Pressure Equipment Directive 2014/68/EU (PED) 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 in free cooling mode.
- 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, internally grooved copper tubes and integrated subcooling circuit.
- 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 Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) with general cut-off switch, power supply electic 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 including:
  - Human Machine Interface (HMI) with external display and accessible via an access hatch
  - Outlet chilled water temperature regulation by means of an exclusive PID algorithm
  - Electronic expansion valve managed by the control system
  - Refrigerant charge monitoring
  - Monitoring of the absorbed current and checking of possible malfunctions
  - Advanced antifreeze protection on evaporator
  - External motorized isolating valve management
  - Anti-freeze protection
  - Compressor timing and protection
  - Pump rotation (if present) on a time basis for equal operation and start-up of the stand-by pump (with alarm signal) in the event of a breakdown
  - Integrated LAN card to connect more than one unit to the local area network
  - Integrated USB connection for data downloading
  - Integrated RS4805 serial card data downloading
  - Integrated clock card.
- Microprocessor control system, in addition, allows:
  - Limiting of absorbed current on preset value or external signal
  - Quick restart procedure to reach total cooling capacity within two or three minutes according to unit configuration
  - 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										
BREF Model		**1812A**	**2212A**	**2512A**	**2812A**	**3212A**	**3612A**	**4212A**	**4812A**	**5612A**
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	14
Basic or Quiet version										
Cooling capacity (1)	kW	428	543	593	685	788	891	103	1139	1224
Absorbed power (1)(2)	kW	127	157	177	201	233	277	313	350	395
EER (1)(2)		3,38	3,46	3,36	3,41	3,39	3,22	3,31	3,26	3,10
Free-cooling capacity (3)	kW	256	299	318	385	409	493	598	619	676
SEER low temperature (a)	%	160,1	173,8	**	173,8	172	170,5	167,6	169,3	**
SEER mid temperature (b)	%	187,3	205,8	181,6	203,1	201,9	202,5	188,7	192,1	185,7
SEPR (c)	-	5,78	6,37	5,91	6,39	6,08	6,35	6,07	6,19	5,84
Basic or Quiet version with subcooling economizer										
Cooling capacity (1)	kW	454	577	634	731	842	959	1112	1232	1320
Absorbed power (1)(2)	kW	141	173	192	228	263	312	350	395	440
EER (1)(2)		3,22	3,34	3,31	3,21	3,21	3,08	3,18	3,12	3,00
Free-cooling capacity (3)	kW	265	312	333	401	429	520	618	649	710
SEER low temperature (a)	%	**	170,6	**	170,8	169,2	167,5	165,7	167,1	**
SEER mid temperature (b)	%	178	196,4	172,9	193,3	192,4	192,8	181,2	183	178,4
SEPR (c)	-	5,8	6,27	5,88	6,33	6,04	6,3	6,15	6,18	5,77
UltraQuiet version										
Cooling capacity (1)	kW	394	507	552	648	737	842	977	1084	1162
Absorbed power (1)(2)	kW	132	162	182	211	241	290	322	361	408
EER (1)(2)		2,99	3,13	3,04	3,08	3,06	2,91	3,04	3,01	2,85
Free-cooling capacity (3)	kW	241	283	303	372	394	471	566	584	648
SEER low temperature (a)	%	157,3	170,2	**	169,2	169,2	164,8	163,8	164,7	**
SEER mid temperature (b)	%	183,5	204	180,8	195	196,3	188,2	182,8	185,7	174,5
SEPR (c)	-	5,83	6,32	5,93	6,2	5,99	6,04	5,97	5,97	5,61
UltraQuiet version with subcooling economizer										
Cooling capacity (1)	kW	430	551	605	707	806	929	1076	1201	1284
Absorbed power (1)(2)	kW	152	185	202	242	276	330	365	411	458
EER (1)(2)		2,83	2,98	3,00	2,93	2,93	2,82	2,95	2,93	2,80
Free-cooling capacity (3)	kW	254	301	322	393	418	501	601	610	682
SEER low temperature (a)	%	154,7	167,4	**	164,8	165	**	**	161,5	**
SEER mid temperature (b)	%	175,2	191,9	171,3	183,7	185,7	181,2	174,7	175,6	168,7
SEPR (c)	-	5,73	6,27	5,83	6,08	5,91	5,89	5,93	5,91	5,45
Noise Pressure Levels										
Basic version (4)	dB(A)	62,8	65,8	65,2	65,4	66,2	66,3	66,7	67,2	68,0
Quiet version (4)	dB(A)	61,9	63,8	63,5	63,6	63,9	63,9	64,2	64,5	65,2
Quiet version with chimneys (4)	dB(A)	58,4	60,9	60,5	60,6	61,2	61,3	61,7	62,1	62,8
UltraQuiet version (4)	dB(A)	53,7	57,9	56,9	57,3	58,7	58,8	59,2	59,9	60,7
Dimensions										
Height (EC fans) (5)	mm	2531	2531	2531	2531	2531	2531	2531	2531	2531
Depth	mm	4985	4985	6415	6415	9110	9110	10540	10540	11970
Width	mm	2200	2200	2200	2200	2200	2200	2200	2200	2200

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
   Unit equipped with EC fans
2. Data refer to total absorbed power (compressors and fans)
   Unit equipped with EC 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
   Unit equipped with EC fans
4. Data refer to free field at 10 meters from the unit operating without pump at minal conditions, with fans at nominal conditions, coil side, Q=2 directional factor. At different conditions and with different configurations, noise values may vary
   Unit equipped with EC fans
5. Data refer to unit without chimneys
   Unit equipped with EC fans

a. Seasonal Energy Efficiency Ratio calculated at 7/12°C water temperatures according to Regulation EU 2016/2281
b. Seasonal Energy Efficiency Ratio calculated at 18/23°C water temperatures according to Regulation EU 2016/2281
c. Seasonal Energy Performance Ratio according to Regulation EU 2016/2281

*. Data refer to units equipped with EC fans. Data in different configurations are available in Schneider Electric specific technical literature

**. Unit not compliant with Ecodesign Regulation EU 2016/2281. Please refer to Schneider Electric for further details

Construction options

- Double power supply with automatic integrated management on the active line and integrated condenser for control board.
- Fans with electronic commutated motors (EC).
- Power phase correction capacitors.
- Subcooling Economizer.
- Operation possible with external temperature up to 50 °C at full load.
- Quite version with soundproof casing and vibration absorbers for compressors.
- UltraQuiet version with soundproof casing, vibration absorbers for compressors and fan speed reduction.
- Noise reduction chimneys for Quiet version.
- Intelligent free-cooling for an increase in efficiency leveraging on the unit in standby.
- Free-cooling operation down to -40°C
- Glycol-free version*.
- Partial condensation heat recovery.
- Suction shut-off valves on compressor.
- Power meter.
- Integrated hydronic system with one or two circulation pumps (1+1 standby).
- Integrated hydronic system with one or two (1+1 standby) inverter-driven circulation pumps and pressure transducers.
- Condensing and free-cooling coils equipped with metal safety grilles and filters.
- Coil manifolds protection panels.
- Anti-corrosion protection treatment for air-side coils.

** On request*

For external accessories see page 76

[Air-cooled water chillers with free-cooling system for outdoor installations]

BREF

Range

Cooling capacity: 300 ÷ 1,000 kW

Available versions

- Basic
- Quiet
- UltraQuiet

Refrigerant R1234ze
Double screw compressors – optimized solution for R1234ze

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 located in the electrical board, discharge shut-off valve, oil heaters, and anti-vibration supports.
- Environmental friendly refrigerant R1234ze(E) featured by low global warming potential GWP<1
- Two refrigerant circuits conforming to Pressure Equipment Directive 2014/68/EU (PED) in copper tubes including: compressor discharge shut-off valve, filter dryer, liquid sight glass, electronic expansion valve managed by the control system, solenoid valve on the liquid line, high and low pressure transducers and high and low pressure gauges.
- Operation possible with external temperature up to 50 °C at full load and water temperature up to 25 °C.
- Possibility of operation with external temperatures down to -25 °C in free-cooling mode.
- 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 and integrated subcooling circuit.
- 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 Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) 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 and thermal protection for compressors
- Sequence phase, minimum and maximum power supply monitoring.
- Free-cooling pump regulated by microprocessor control.
- Microprocessor control system including:
  - Human Machine Interface (HMI) with external display and accessible via an access hatch
  - Outlet chilled water temperature regulation by means of an exclusive PID algorithm
  - Modulating condensation pressure control
  - Electronic expansion valve managed by the control system
  - Indirect and direct refrigerant charge monitoring
  - Monitoring of the absorbed current and checking of possible malfunctions
  - Advanced antifreeze protection on evaporator
  - External motorized isolating valve management
  - Anti-freeze protection
  - Compressor timing and protection
  - Unloading to protect unit operation even with temperatures which exceed the maximum
  - 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 to connect more than one unit to the local area network
  - Integrated USB connection for data downloading
  - Integrated RS4805 serial card data downloading
  - Integrated clock card
- Microprocessor control system, in addition, allows:
  - Limiting of absorbed current on preset value orexternal signal
  - Quick restart procedure to reach total cooling capacity within two or three minutes according to the configuration
  - 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										
BREF Model		**1832A**	**2232A**	**2532A**	**2832A**	**3232A**	**3632A**	**4232A**	**4832A**	**5632A**
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	14
Basic or Quiet version										
Cooling capacity (1)	kW	353	434	499	577	707	763	864	949	1018
Absorbed power (1)(2)	kW	104	124	144	170	201	218	256	281	305
EER (1)(2)		3,40	3,50	3,45	3,40	3,51	3,51	3,38	3,38	3,34
Free-cooling capacity (3)	kW	170	201	219	262	288	336	401	421	463
SEER low temperature (a)	%	156,7	168,7	162,6	162	172,7	176,4	163,1	**	**
SEER mid temperature (b)	%	177,9	186,7	178,8	175,7	192,8	197,5	175,9	174,7	178,2
SEPR (c)	-	5,59	5,82	5,56	5,6	5,64	6,07	5,42	5,2	5,24
UltraQuiet version										
Cooling capacity (1)	kW	329	413	469	532	659	709	803	887	940
Absorbed power (1)(2)	kW	101	122	144	173	205	227	258	285	311
EER (1)(2)		3,24	3,37	3,25	3,08	3,22	3,12	3,12	3,12	3,02
Free-cooling capacity (3)	kW	163	194	210	248	280	319	381	401	437
SEER low temperature (a)	%	155,5	167,8	161,5	**	171,7	173,7	161,5	**	**
SEER mid temperature (b)	%	185,2	189,8	186,9	180,5	201,6	203,7	181,1	177,5	183,2
SEPR (c)	-	5,73	5,96	5,56	5,67	5,71	6,11	5,51	5,27	5,33
Noise Pressure Levels										
Basic version (4)	dB(A)	62,8	65,8	65,2	65,4	66,2	66,3	66,7	67,2	68,0
Quiet version (4)	dB(A)	61,9	63,8	63,5	63,6	63,9	63,9	64,2	64,5	65,2
Quiet version with chimneys (4)	dB(A)	58,4	60,9	60,5	60,6	61,2	61,3	61,7	62,1	62,8
UltraQuiet version (4)	dB(A)	53,7	57,9	56,9	57,3	58,7	58,8	59,2	59,9	60,7
Dimensions										
Height (EC fans) (5)	mm	2531	2531	2531	2531	2531	2531	2531	2531	2531
Depth	mm	5005	6435	6435	6435	9110	9110	10540	10540	11970
Width	mm	2200	2200	2200	2200	2200	2200	2200	2200	2200

1. Data refer to nominal conditions: water temperature 15/10 °C, external temperature 35 °C, glycol 20%, refrigerant R1234ze, fouling factor 0.0 m^2 °C/WUnit equipped with EC fans
2. Data refer to total absorbed power (compressors and fans) Unit equipped with EC fans
3. Data refer to nominal conditions: inlet water temperature 15 °C, external temperature 5 °C, glycol 20%, refrigerant R1234ze, fouling factor 0.0 m^2 °C/W Unit equipped with EC fans
4. Data refer to free field at 10 meters from the unit operating without pump at minal conditions, with fans at nominal conditions, coil side, Q=2 directional factor. At different conditions and with different configurations, noise values may vary Unit equipped with EC fans
5. Data refer to unit without chimneys Unit equipped with EC fans

a. Seasonal Energy Efficiency Ratio calculated at 7/12°C water temperatures according to Regulation EU 2016/2281

b. Seasonal Energy Efficiency Ratio calculated at 18/23°C water temperatures according to Regulation EU 2016/2281

c. Seasonal Energy Performance Ratio according to Regulation EU 2016/2281

*. Data refer to units equipped with EC fans. Data in different configurations are available in Schneider Electric specific technical literature

**. Unit not compliant with Ecodesign Regulation EU 2016/2281. Please refer to Schneider Electric for further details

Construction options

- Double power supply with automatic integrated management on the active line and integrated condenser for control board.
- Fans with electronic commutated motors (EC).
- Quiet version with soundproof casing fitted with refrigerant leakage system and ventilation system and vibration absorbers for compressors.
- UltraQuiet version with soundproof soundproof casing fitted with refrigerant leakage system and ventilation system, vibration absorbers for compressors and fan speed reduction.
- Noise reduction chimneys for Quiet version*.
- Intelligent free-cooling for an increase in efficiency leveraging on the unit in standby.
- Glycol-free version*.
- Suction shut-off valves on compressor.
- Power phase capacitors for compressors.
- Power meter.
- Integrated hydronic system with one or two circulation pumps (1+1 standby).
- Integrated hydronic system with one or two inverter-driven circulation pumps (1+1 standby) and pressure transducers.
- Antifreeze protection on evaporator and pump group.
- Condensing and free-cooling coils equipped with metal safety grilles and filters.
- Coil manifolds protection panels.
- Anti-corrosion protection treatment for air-side coils.

** On request*

For external accessories see page 76

[Variable speed air-cooled water chillers with free-cooling system for outdoor installations]

BCEF

Range

Cooling capacity: 300 ÷ 1,200 kW

Available versions

- Quiet
- UltraQuiet

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 (quiet version).
- Coil manifold protection panels.
- Single refrigerant circuit conforming to Pressure Equipment Directive 2014/68/EU (PED) 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.
- The refrigerant circuit is covered by acoustic soundproof insulation for noise reduction.
- 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 coils with aluminum fins, internally grooved copper tubes and integrated subcooling circuit.
- 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 Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) 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
  - Direct decoding of all compressor signals on the human interface to simplify service operations
  - 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
  - Fast restart procedure
  - 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.	6	6	8	10	12	14	16
Quiet version								
Cooling capacity (1)	kW	332	444	642	684	909	1010	1350
Absorbed power (1)(2)	kW	99	124	184	191	251	283	374
EER (1)(2)		3,38	3,57	3,50	3,59	3,63	3,57	3,62
Free-cooling capacity (3)	kW	235	279	380	407	587	682	783
SEER low temperature (a)	%	212,8	205,9	205,2	215,1	213,9	220	212
SEER mid temperature (b)	%	245,6	242	213,4	247,1	240,5	247,4	250,3
SEPR (c)	-	6,38	7,96	7,28	7,01	8,22	7,14	7,45
UltraQuiet version								
Cooling capacity (1)	kW	306	407	584	629	835	915	1240
Absorbed power (1)(2)	kW	87,9	117,8	167,8	172,9	236,4	254,9	355,0
EER (1)(2)		3,48	3,46	3,48	3,64	3,53	3,59	3,49
Free-cooling capacity (3)	kW	245	325	445	452	658	758	886
SEER low temperature (a)	%	213,9	205,1	210,1	221,4	216	221,9	204,8
SEER mid temperature (b)	%	248,9	246,1	222,4	233,4	242,4	252,2	243,2
SEPR (c)	-	6,73	6,73	7,59	7,52	8,37	7,78	7,08
Noise Pressure Levels								
Quiet version (4)	dB(A)	59,6	59,8	60,4	60,8	61,2	61,4	61,7
Quiet version with chimneys (4)	dB(A)	55,9	56,2	56,9	57,2	57,7	57,8	58,2
UltraQuiet version (4)	dB(A)	51,8	52,9	53,5	53,5	54,4	54,2	55,1
Dimensions								
Height (EC fans) (5)	mm	2531	2531	2531	2531	2531	2531	2531
Depth	mm	5000	5000	6430	7860	9290	10720	12150
Width	mm	2200	2200	2200	2200	2200	2200	2200

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

a. Seasonal Energy Efficiency Ratio calculated at 7/12°C water temperatures according to Regulation EU 2016/2281

b. Seasonal Energy Efficiency Ratio calculated at 18/23°C water temperatures according to Regulation EU 2016/2281

c. Seasonal Energy Performance Ratio according to Regulation EU 2016/2281

* . Data refer to units quipped with EC fans. Data in different configurations are available in Schneider Electric specific technical literature

Construction options

- Double power supply with automatic integrated management on the active line. Quick restart included (full load capacity within 3 minutes).
- Separate power supply for control board and heaters operation. Quick restart included (full load capacity within 3 minutes).
- 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).
- Soundproof enclosure for compressor/s and fan speed reduction.
- Noise reduction chimneys for Quiet version
- Intelligent free-cooling.
- Modulating bypass valve designed to handle low load conditions.
- Free-cooling operation to -40°C.
- Glycol-free arrangement*.
- Integrated hydronic system with one or two circulation pumps (1 + 1 standby).
- Integrated hydronic system with one or two (1+1 standby)
  inverter-driven circulation pumps and pressure transducers.
- Coil manifolds protection panels.

* *On request.*

For external accessories see page 76

BRWC

Range

Cooling capacity: 300 ÷ 1,200 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 Pressure Equipment Directive 2014/68/EU (PED) 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 Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) 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 2202A, 3202A models.*

Technical Data							
BRWC / BRWH MODEL		**1602A**	**1802A**	**2202A**	**2802A**	**3202A**	**4202A**
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					
Condensers	nr. x mod.	2 x shell and tube					
Cooling only unit (BRWC)							
Cooling capacity (1)	kW	454	509	649	820	965	1240
Absorbed power (1)(2)	kW	83,4	98	114,7	148	172	233
EER (1)(2)		5,44	5,20	5,66	5,54	5,61	5,32
ESEER (3)	kW	5,11	4,67	5,35	5,26	5,15	5,03
IPLV (4)	°C	5,52	5,00	5,88	5,68	5,63	5,50
Noise Pressure Levels							
Basic version (5)	dB(A)	73,7	73,8	79,5	79,6	77,3	76,3
Low noise version (5)	dB(A)	73,7	64,6	69,6	72,4	69,3	71,8
Dimensions							
Height	mm	2038	2038	2043	2043	2340	2340
Depth	mm	860	860	860	860	1485	1485
Width	mm	3874	3874	4234	4234	4300	4300

1. Data refer to nominal conditions: evaporator in/out temperature 12/7 °C, condenser in/out temperature 30/35 °C, glycol 0%, refrigerant R134a, fouling factor 0.0 m^2 °C/W
2. Data refer to total absorbed power
3. European seasonal energy efficiency ratio
4. Integrated partial load value
5. Data refer to free field at 1 meter from the unit operating without pump at nominal conditions, Q=2 directional factor. At different conditions and with different configurations, noise values may vary

* Data refer to basic units. Data in different configuratons are available in Schneder Electric specific technical literature

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 2202A, 3202A models.*

Options

- Pressostatic two-way 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.

[Air cooled water chillers with backward curved bladed fans for outdoor/indoor installations]

ERCC

Range

Cooling capacity: 50 ÷ 110 kW

Available versions

- Basic
- Quiet

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, phase sequence control, safety internal valve, non-return discharge valve, oil level glass, anti-vibration supports.
- Compressor casing for safe operation, and protection
- Single (**21A model) or double (**22A model) refrigerant circuit* conforming to Pressure Equipment Directive 2014/68/EU (PED) in copper tubing including filter dryer, liquid sight glass, thermostatic valve with external equalization, high and low pressure switches, and high and low 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 aluminium fins and mechanically expanded copper tubes.
- 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 with fan speed regulation.
- Electrical panel conforming to Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) protection grade IP54 with maximum internal temperature control, auxiliary transformer, general auxiliary cut-off switch, magneto-thermal protection switches with trip alarm signal on compressors, magneto thermal protection for fan speed control protection, safe-motor for pumps protection and remote control cut-off switches. Electrical board equipped an embedded contact for an externally fitted 230V isolating motorized valve.
- 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 temperature regulation by means of an exclusive algorithm
  - Production of chilled water to -15 °C
  - 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
  - Main electrical data acquisition and management
  - Integrated clock card.
  - 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).

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

Technical Data											
ERCC		**0521A**	**0621A**	**0721A**	**0821A**	**0921A**	**0922A**	**1021A**	**1022A**	**1221A**	**1222A**
Power supply	V/ph/Hz	400/3/50									
Compressors/circuits	nr. x mod.	2/1	2/1	2/1	2/1	2/1	2/2	2/1	2/2	2/1	2/2
Evaporator	nr. x mod.	1 x brazed plate									
Fans	nr.	2	2	2	2	2	2	3	3	3	3
ERCC - Basic / Quiet version											
Cooling capacity (1)	kW	44	52	60	70	77	78	90	90	107	107
Absorbed power (1)(2)	kW	17,3	21,1	23,5	27	30,9	31	35,3	35,3	40,3	40,4
EER (1)(2)		2,54	2,46	2,55	2,59	2,49	2,52	2,55	2,55	2,66	2,65
ESEER (3)		3,51	3,56	3,75	3,57	3,56	2,86	3,92	2,97	3,82	3,02
SEER mid temperature (b)	%	153,8	150,5	155,7	158,1	153,3	149,8	162	152,4	166	160,5
SEPR (c)	-	4,53	**	4,56	4,62	**	**	4,68	**	4,90	**
ERCC Noise Pressure Levels											
Basic version (6)	dB(A)	65,2	65,3	65,3	66,8	66,8	66,8	69,9	69,9	71,2	71,2
Quiet version (6)	dB(A)	63,1	63,2	63,2	64,7	64,7	64,7	65,3	65,3	66,6	66,6
ERAC Dimensions											
Height (EC fans)	mm	1836	1836	1836	1836	1836	1836	2146	2146	2146	2146
Depth	mm	1213	1213	1220	1220	1220	1184	1272	1184	1272	1184
Width	mm	2026	2026	2821	2821	2821	2804	3088	3073	3088	3073

1. Data refer to nominal conditions: water temperature 12/7 °C, external temperature 35 °C, external static pressure 50Pa, glycol 0%, refrigerant R410A, fouling factor 0.0 m^2 °C/W
   Unit equipped with EC fans
2. Data refer to total absorbed power (compressors and fans)
   Unit equipped with EC fans
3. European seasonal energy efficiency ratio
   Unit equipped with EC fans
4. Data refer to 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 and with different configurations, noise values may vary
   Unit equipped with EC fans

b. Seasonal Energy Efficiency Ratio calculated at 18/23°C water temperatures according to Regulation EU 2016/2281

c. Seasonal Energy Performance Ratio according to Regulation EU 2016/2281

*. Data refer to units equipped with EC fans. Data in different configurations are available in Schneider Electric specific technical literature

**. Unit not compliant with Ecodesign Regulation EU 2016/2281. Please refer to Schneider Electric for further details

Construction options

- Quiet version with compressor soundproof casing.
- Double power supply with automatic integrated management on the active line.
- Acoustic-Composite fans with electronic commutated motors (EC).
- Partial condensation heat recovery.
- Total condensation heat recovery (ERCC**21A models only).
- Electronic expansion valve (**21A models only)
- Integrated hydronic system with one or two circulation pumps.
- Integrated hydronic system with one inverter driven circulation pump.
- Internal water tank.
- Internal water tank including a pump to manage the primary circuit.
- Anti-freeze heaters option unit can operate down to -20 °C external temperature.
- Discharge shut-off valves
- Power factor improvement compressors.
- Compressor soft start.

Cataphoresis treatment for the condensing coils.

- Modification of the set point by external 0 V – 10 V signal.

For external accessories see page 76

[Variable speed air-cooled water chillers with backward curved blade fans for indoor/outdoor installations]

ISCC

Range

Cooling capacity: 60 ÷ 120 kW

Available versions

- Quiet
- UltraQuiet

Refrigerant R410A
Inverter-driven 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.
- Inverter-driven hermetic Scroll compressor, equipped with inverter speed control, oil by-pass valve and line, integrated soft start, power factor correction condenser, integrated thermal protection, crankcase heaters and inverter with oil heating function, anti-vibration supports, and an inverter driver with IP54 protection grade coupled with a specific compressor and positioned in a dedicated housing compartment.
- Compressor soundproof casing for noise reduction, safe operation, and protection
- Single refrigerant circuit conforming to Pressure Equipment Directive 2014/68/EU (PED) in copper tubing including filter dryer, liquid sight glass, thermostatic valve with external equalization, high and low pressure switches, and high and low pressure transducers.
- Environmentally friendly refrigerant R410A.
- Electronic expansion valve
- 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.
- 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 with fan speed regulation.
- Electrical panel conforming to Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) protection grade IP54 with maximum and minimum internal temperature control, auxiliary transformer, general auxiliary cut-off switch, magneto-thermal protection switches with trip alarm signal on compressors, magneto thermal protection for fan speed control protection, safe-motor for pumps protection and remote control cut-off switches. Electrical board equipped with an embedded contact for an externally fitted 230V isolating motorized valve.
- 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 ISAH) temperature regulation by means of an exclusive algorithm
  - Production of chilled water to -15 °C
  - 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
  - Main electrical data acquisition and management
  - Integrated clock card.
  - 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				
ISCC/ISCH Models		**0621A**	**0921A**	**1221A**
Power supply	V/ph/Hz	400/3/50		
Compressors/circuits	nr. x mod.	2/1	2/1	2/1
Evaporator	nr. x mod.	1 x brazed plate		
Fans	nr.	2	2	3
ISCC — Quiet version				
Cooling capacity (1)	kW	58	86	114
Absorbed power (1)(2)	kW	21,4	30,0	41,4
EER (1)(2)		2,71	2,73	2,70
ESEER (3)		4,01	4,21	4,32
SEER low temperature (a)	%	153,8	159,3	168
SEER mid temperature (b)	%	179,3	180,2	195,2
SEPR (c)	-	4,66	4,92	5,30
ISCC / ISCH Noise Pressure Levels				
Quiet version (6)	dB(A)	65,3	66,8	71,2
ISCC / ISAH Dimensions				
Height (EC fans)	mm	1836	1836	2146
Depth	mm	1214	1214	1276
Width	mm	2003	2804	3073

1. Data refer to nominal conditions: water temperature 12/7 °C, external temperature 35 °C, external static pressure 50Pa, glycol 0%, refrigerant R410A, fouling factor 0.0 m2 °C/W Unit equipped with EC fans
2. Data refer to total absorbed power (compressors and fans) Unit equipped with EC fans
3. Integrated partial load value Unit equipped with EC fans
4. Data refer to 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 and with different configurations, noise values may vary Unit equipped with EC fans

a. Seasonal Energy Efficiency Ratio calculated at 7/12°C water temperatures according to Regulation EU 2016/2281

b. Seasonal Energy Efficiency Ratio calculated at 18/23°C water temperatures according to Regulation EU 2016/2281

c. Seasonal Energy Performance Ratio according to Regulation EU 2016/2281

*. Data refer to units quipped with EC fans. Data in different configurations are available in Schneider Electric specific technical iterature

Construction options

- Double power supply with automatic integrated management on the active line.
- Acoustic-Composite fans with electronic commutated motors (EC).
- Partial condensation heat recovery.
- Integrated hydronic system with one or two circulation pumps.
- Integrated hydronic system with one inverterdriven circulation pump.
- Discharge shut-off valves
- Cataphoresis treatment for the condensing coils.
- Modification of the set point by external 0 V – 10 V signal.

For external accessories see page 76

ERCF

Range

Cooling capacity: 50 ÷ 120 kW

Available versions

- Basic
- Quiet

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, discharge gas thermal protection (ERCH), phase sequence control, safety internal valve, non-return discharge valve, oil level glass, anti-vibration supports.
- Compressor casing for safe operation, and protection (basic version)
- Single or double (**22A model) refrigerant circuit* conforming to Pressure Equipment Directive 2014/68/EU (PED) in copper tubing including filter dryer, liquid sight glass, thermostatic valve with external equalization, high and low pressure switches, and high and low 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 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.
- 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.
- Electrical panel conforming to Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) protection grade IP54 with maximum and minimum internal temperature control, auxiliary transformer, general auxiliary cut-off switch, magneto-thermal protection switches with trip alarm signal on compressors, magneto thermal protection for fan speed control protection, safe-motor for pumps protection and remote control cut-off switches.
- Modulating condensation control with an embedded contact for an externally fitted 230V isolating motorized valve.
- Electrical board equipped with control and 230V power supply for external motorized isolating valve.
- Phase sequence control and phase presence monitoring, minimum / maximum voltage protection and correct phase balancing.
- Anti-freeze heaters
- 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 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
  - Main electrical data acquisition and management
  - Integrated clock card.
  - 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).

** 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	400/3/50									
Compressors/circuits	nr. x mod.	2/1	2/1	2/1	2/1	2/1	2/2	2/1	2/2	2/1	2/2
Evaporator	nr. x mod.	1 x brazed plate									
Fans	nr.	2	2	2	2	2	2	3	3	3	3
ERCF — Basic/Quiet version											
Cooling capacity (1)	kW	49	58	67	77	85	86	100	100	118	119
Absorbed power (1)(2)	kW	17,8	21,7	24,2	27,8	31,9	31,9	36,3	36,3	41,5	41,5
EER (1)(2)		2,75	2,67	2,77	2,77	2,66	2,70	2,75	2,75	2,84	2,87
Free-cooling capacity (3)	kW	36	38	43	53	55	55	63	63	74	74
SEER mid temperature (b)	%	**	149,7	155,3	157,4	153,3	150,5	166,3	152,7	169	160,1
SEPR (c)	-	4,76	4,60	4,82	4,91	4,64	**	4,86	**	5,27	**
ERCF Noise Pressure Levels											
Basic version (5)	dB(A)	65,2	65,3	65,3	66,8	66,8	66,8	69,9	69,9	71,2	71,2
Quiet version (5)	dB(A)	63,1	63,2	63,2	64,7	64,7	64,7	65,3	65,3	66,6	66,6
ERCF Dimensions											
Height (EC fans)	mm	1836	1836	1836	1836	1836	1836	2146	2146	2146	2146
Depth	mm	1213	1213	1220	1220	1220	1184	1272	1184	1272	1184
Width	mm	2026	2026	2821	2821	2821	2804	3088	3073	3088	3073

1. Data refer to nominal conditions: water temperature 15/10 °C, external temperature 35 °C, external static pressure 50Pa, glycol 20%, refrigerant R410A, fouling factor 0.0 m² °C/W
   Unit equipped with EC fans
2. Data refer to total absorbed power (compressors and fans)
   Unit equipped with EC fans
3. Data refer to nominal conditions: inlet water temperature 15 °C, external temperature 5 °C, external static pressure 50Pa, glycol 20%, refrigerant R134a, fouling factor 0.0 m2 °C/W
   Unit equipped with EC fans4. Data refer to otal input power (compressors, fans and free-cooling pump)
4. Data refer to 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 and with different configurations, noise values may vary
   Unit equipped with EC fans

a. Seasonal Energy Efficiency Ratio calculated at 7/12°C water temperatures according to Regulation EU 2016/2281
b. Seasonal Energy Efficiency Ratio calculated at 18/23°C water temperatures according to Regulation EU 2016/2281
c. Seasonal Energy Performance Ratio according to Regulation EU 2016/2281

*. Data refer to units quipped with EC fans. Data in different configurations are available in Schneider Electric specific technical literature

**. Unit not compliant with Ecodesign Regulation EU 2016/2281. Please refer to Schneider Electric for further details

Construction options

- Quiet version with compressor soundproof casing.
- Double power supply with automatic integrated management on the active line.
- Acoustic-Composite fans with electronic commutated motors (EC).
- Partial condensation heat recovery.
- Electronic expansion valve (**21A models only)
- Intelligent free-cooling.
- Integrated hydronic system with one or two circulation pumps.
- Integrated hydronic system with one inverter driven circulation pump.
- Internal water tank.
- Internal water tank including a pump to manage the primary circuit.
- Discharge shut-off valves
- Power factor improvement compressors.
- Compressor soft start.
- Cataphoresis treatment for the condensing coils.
- Modification of the set point by external 0 V – 10 V signal.

For external accessories see page 76

[Variable speed air-cooled water chillers and heat pumps with BCF and free-cooling system for indoor/outdoor installations]

ISCF

Range

Cooling capacity: 60 ÷ 120 kW

Available versions

- Quiet

Refrigerant R410A
Inverter-driven 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.
- Inverter-driven hermetic Scroll compressor, equipped with inverter speed control, oil by-pass valve and line, integrated soft start, power factor correction condenser, integrated thermal protection, crankcase heaters and inverter with oil heating function, anti-vibration supports, and an inverter driver with IP54 protection grade coupled with a specific compressor and positioned in a dedicated housing compartment.
- Compressor soundproof casing for noise reduction, safe operation, and protection (quiet version).
- Single refrigerant circuit conforming to Pressure Equipment Directive 2014/68/EU (PED) in copper tubing including filter dryer, liquid sight glass, thermostatic valve with external equalization, high and low pressure switches, and high and low pressure transducers.
- Environmentally friendly refrigerant R410A.
- Electronic expansion valve
- 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.
- 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.
- 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 with fan speed regulation.
- Electrical panel conforming to Machinery Directive 2006/42/EC (MD) and Electromagnetic compatibility Directive 2014/30/EU (EMC), Regulation (EU) No 517/2014 on fluorinated greenhouse gases (F-GAS) protection grade IP54 with maximum and minimum internal temperature control, auxiliary transformer, general auxiliary cut-off switch, magneto-thermal protection switches with trip alarm signal on compressors, magneto thermal protection for fan speed control protection, safe-motor for pumps protection and remote control cut-off switches. Electrical board equipped with an embedded contact for an externally fitted 230V isolating motorized valve.
- Phase sequence control and phase presence monitoring, minimum / maximum voltage protection and correct phase balancing.
- Anti-freeze heaters
- 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 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
  - Main electrical data acquisition and management
  - Integrated clock card.
  - 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				
ISCF Model		**0621A**	**0921A**	**1221A**
Power supply	V/ph/Hz	400/3/50		
Compressors/circuits	nr. x mod.	2/1	2/1	2/1
Evaporator	nr. x mod.	1 x brazed plate		
Fans	nr.	2	2	3
ISCF — Quiet version				
Cooling capacity (1)	kW	63	89	122
Absorbed power (1)(2)	kW	22,0	30,8	42,5
EER (1)(2)		2,86	2,88	2,87
Free-cooling capacity (3)	kW	38	53	72
SEER mid temperature (b)	%	170,4	173,3	188
SEPR (c)	-	5,03	5,19	5,55
ISCF Noise Pressure Levels				
Quiet version (5)	dB(A)	65,3	66,8	71,2
ISCF Dimensions				
Height (EC fans)	mm	1836	1836	2146
Depth	mm	1214	1214	1276
Width	mm	2003	2804	3073

1. Data refer to nominal conditions: water temperature 15/10 °C, external temperature 35 °C, external static pressure 50Pa, glycol 20%, refrigerant R410A, fouling factor 0.0 m^2 °C/W Unit equipped with EC fans
2. Data refer to total absorbed power (compressors and fans) Unit equipped with EC fans
3. Data refer to nominal conditions: inlet water temperature 15 °C, external temperature 5 °C, external static pressure 50Pa, glycol 20%, refrigerant R134a, fouling factor 0.0 m2 °C/W Unit equipped with EC fans
4. Data refer to 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 and with different configurations, noise values may vary Unit equipped with EC fans

b. Seasonal Energy Efficiency Ratio calculated at 18/23°C water temperatures according to Regulation EU 2016/2281

c. Seasonal Energy Performance Ratio according to Regulation EU 2016/2281

*. Data refer to units quipped with EC fans. Data in different configurations are available in Schneider Electric specific technical literature

Construction options

- Double power supply with automatic integrated management on the active line.
- Acoustic-Composite fans with electronic commutated motors (EC).
- Partial condensation heat recovery.
- Intelligent free-cooling.
- Integrated hydronic system with one or two circulation pumps.
- Integrated hydronic system with one inverterdriven circulation pump.
- Discharge shut-off valves
- Cataphoresis treatment for the condensing coils.
- Modification of the set point by external 0 V – 10 V signal.

For external accessories see page 76

External accessories for Aquaflair chillers

The table below shows the options availability for each Aquaflar chiller range*.

Accessory	ERAC/F/H ERCC/F	ISAC/F/H ISCC/F	TRAC/F/H	TSAC/F	BREC/F	BCEC/F
Semi-graphic non touch remote human interface	●	●	●	●	●	●
Rubber Anti-vibration supports	●	●	●	●	●	●
Spring Anti-vibration supports	●	●	●	●	●	●
Flanged type hydraulic connections	●	●	●	●	●	●
Victaulic type hydraulic connections	●	●	●	●	●	●
RS485 serial adaptor	●	●	●	●	●	●
Additional RS485 serial adaptor	●	●	●	●	●	●
TCP/IP adaptor (SNMP, Modbus TCP.IP)	●	●	●	●	●	●
Additional TCP/ IP adaptor (SNMP, Modbus TCP.IP)	●	●	●	●	●	●
LON-FTT-10 serial adaptor	●	●	●	●	●	●
BACnet Over IP adaptor	●	●	●	●	●	●
BACnet MS/TP serial adaptor	●	●	●	●	●	●

Key:

- ● Included in the basic configuration of the unit
- ● Optional
- ● On request
- ● Not available/Not applicable

* External accessories for LRAC/H units and water cooled units are included in the dedicated technical sheets

Schneider Electric Cooling Services

Schneider Electric offers service solutions for all of our cooling customers. These services are customized to best meet your cooling service needs. Proper care is essential to ensure your solution is operating at its peak performance, and thereby prolonging the life of your critical cooling equipment.

Why choose Schneider Electric as your Cooling Specialist?

Schneider Electric provides quality service and solutions from trained and trusted HVAC professionals. Our best-in-class service organization ensures your receiving the highest quality service from Schneider Electric certified engineers. Our global cooling service organization is there to support you from commissioning to maintaining your critical applications.
Whether you are planning, installing, or operating a facility, Schneider Electric has the expertise and services to support you throughout the many phases of its life cycle.

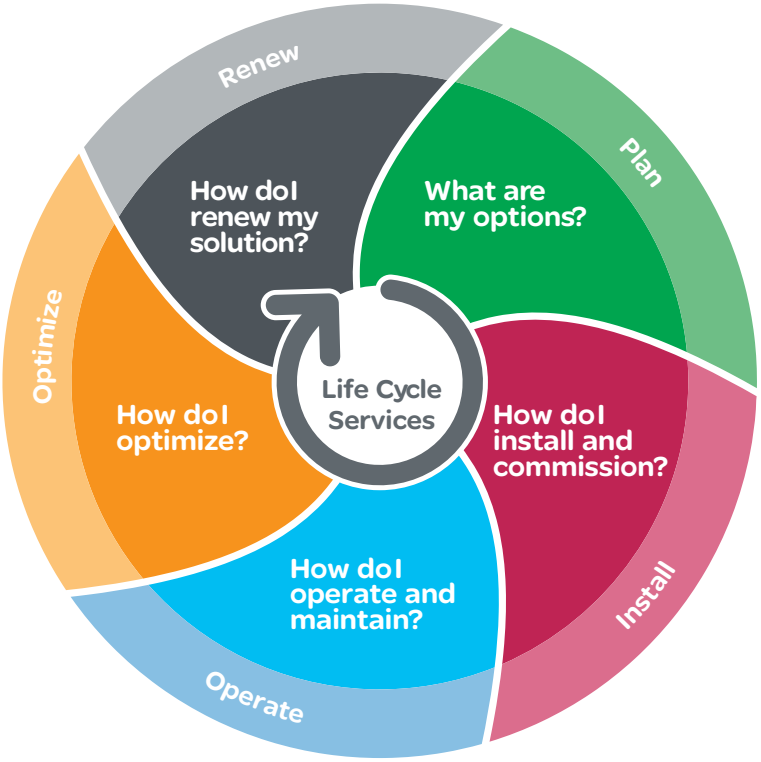
Plan: Our experts can help you plan, define, and design the right solution for increased efficiency and availability.

Install: Convert your plan into an efficient, reliable, and safe solution with project management, installation, and integration services from Schneider Electric to ensure quick and efficient implementation of your equipment.

Operate: Maximize your solution uptime and performance with Advantage Plan service packages that keep your equipment running efficiently and maintain maximum availability, while protecting your investment.

Optimize: Our solution experts and remote monitoring systems will provide proactive and tailored recommendations to reduce risk and improve solution's performance and reliability.

Renew: Schneider Electric enables you to increase performance and flexibility, while controlling the costs of aging infrastructure.



Cooling for Datacenter interactive application

To learn more about Schneider Electric cooling solutions, download the interactive application “Cooling for Data Center”, available for iPad®

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