cosmotec

your cooling solutions



Industrial Refrigeration

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All the achievements **cosmotec** *has made so far and those to come have been possible thanks to the commitment, ideas and work of the people who make it up and who help make it grow every day*

Paolo Perotti – CEO and **cosmotec** founder

cosmotec

your cooling solutions

The history of **cosmotec** began in 1989, in Peschiera del Garda, from the dream of people who strongly believed in their experience in industrial air conditioning and in sharing it with their customers.

Shortly after the production of the first units and the beginning of export worldwide, the need to expand the product range to meet all the Thermal Management needs opened up; this led to the birth of the industrial refrigeration line, a major challenge that saw **cosmotec** competing on an equal footing with important players in the industry, asserting what is its most distinctive trait: working closely with customers, providing products and solutions that can solve their needs.

The approach chosen to meet market demands is lean and effective, a typical example of Italian flexibility, coupled with the solidity represented by the German STULZ group, which **cosmotec** joined in 2001.
With STULZ, the product lines expanded to include telecommunications and new ranges of chillers with increasingly higher capacities.

The speed of product renewal grew dramatically, and to keep up with the needs of the markets, **cosmotec** decided to invest in employee training, production quality and efficiency, product engineering, and, in addition, expanded its production area, with new lines and a state-of-the art Climatic Chamber.

The company's efforts are currently aimed at maintaining the efficiency and flexibility of its product ranges at the highest levels: the "Innovation Center" was created with this goal, in order to allow the development and testing of new technologies that meet the needs of sustainability and efficiency required by today's market.

Foundation Year
1989

Employees
300

Worldwide partners
130

Units per year
10.000

Our Values

The key to **cosmotec**'s success lies in its continuous **innovation**, ability and **flexibility** in handling each project, from its conception developed in cooperation with the customer, through to installation, maintenance and service, each time studying specific solutions to the needs of each individual plant and application.

Enthusiasm, the drive to strive for excellence and for new solutions in step with customer demands, attention to **workers' health and safety** and to the **environment,** transparency and acting responsibly: these are the values by which **cosmotec** is inspired by and by which it is guided every day.

Through offering highly specialized services and products in high-tech fields, we contribute to the growth of the company team and our clients.

The Value of People

The company's most valuable resource is undoubtedly its people. They are the strength for the continuous development of activities and the achievement of success.

A highly specialised team, capable of proposing and implementing solutions with the highest technological level for the industrial sector, and able to fulfil the specific requirements of each individual customer, following them through every stage of the project and beyond.

Sustainability and Environmental Responsibility
We strive to reduce the company's environmental footprint and handle product design, development and production in a way that minimises environmental impact throughout its life cycle.

People and Work Ethics
We are committed to empowering people, identifying and developing talents and creating an environment based on trust, respect and personal well-being. We base all our internal and external relationships on transparency and fairness. We work daily to ensure that all employees work under the safest conditions.

Reliability
We conceive, design, develop and propose our solutions and services in such a way as to ensure continuity of service over time.

Innovation
we are committed to introducing new ways of designing, producing and selling goods or services, pursuing the continuous improvement of our offer.

Focus on Customer and Quality
we offer scalable solutions and share our expertise by gathering, intercepting and anticipating customers' implicit or expressed needs and market trends.



Making cooling greener, one step at a time



cosmotec strongly believes in the duty to contribute to decreasing and improve the environmental impacts associated with its activities and products.

In the Company

One of **cosmotec**'s main goals is the continuous improvement of environmental performance, to be achieved both through a reduction in wastage of resources (such as raw materials and energy) and through greater control of environmental costs, related to the treatment (disposal/recovery) of waste. With that in mind, the company has achieved the following certifications:

ISO 14001 (Environmental Management System): ensuring a business model based on sustainability and reducing the environmental impact of products and the entire production process in order to provide customers with a service that meets current environmental standards. All activities that may affect the environment are assessed and controlled in accordance with current regulations.

ISO 50001 (Energy Management System): It aims to improve the company's energy performance, such as reducing energy consumption and related costs; reducing CO2 emissions.

Furthermore, the focus on environmental issues led to the decision to adopt a policy of reducing the use of paper documentation.

Paperless Documentation
our units are accompanied by the instructions for safe use and CE declaration, while the rest of the documentation will be available on Adam, our free App, downloadable on our webiste.



In the Products

To fight climate change and reduce greenhouse gas emissions, specific regulations have been introduced, including Regulation No. 573/2024, which imposes the phase-down of HFCs.

cosmotec has decided to use low GWP (Global Warming Potential) gases, which significantly reduce the carbon footprint and environmental impact of our products.

Improved performance and reduced power consumption for high energy efficiency.

EER (Energy Efficiency Ratio): our units boast the best values in the business

SEPR (Seasonal Energy Performance Ratio): chillers in the **cosmotec** line comply with the Ecodesign regulation and achieve high SEPR values

Service

The knowledge we have acquired developing industrial air conditioning and refrigeration systems, allows us to offer our customers a complete service, from the design of the systems to the supply of the machines, from the Start Up phase to the ordinary and extraordinary maintenance.

The level of complexity and precision required in today's production processes require a high level of control and reliability. The management of temperatures and heat disposal is one of the critical issues to be addressed, considering the uniqueness of each process and application.

Our technical assistance is also able to guarantee a remote assistance service: **cosmotec**, always attentive to the needs of its customers, has developed and launched on the market a range of technologically advanced controllers that guarantee connectivity wherever you are. And thanks to connectivity, our support team can be at your side in real time, wherever you are, and give you advice and suggestions on how to improve performance, solve any problems and check the operation of your units.

Please visit our dedicated website, www.cosmotecservice.com, to discover our offer and find the contacts of our international service network!







Advice and Planning
Support from the planning phase through to installation and start-up of the system



Positioning and Installation
We guarantee the correct operation of equipment and related systems



Startup
We guarantee perfect commissioning and start-up of the entire system, with customised solutions



Maintenance contracts
A preventive and routine maintenance plan, ensuring constant plant efficiency



Availability
With guaranteed response times



Training
Programme of high-quality training courses with technical content technical content



Remote Assistance
At your side in real time, with the help of augmented reality devices



Spare Parts
Supply of spare parts and repair service both in-house and on site

Selection & Monitoring Softwares

The correct cooling of industrial plants is vital for the operation of companies, as is the ability to monitor, even remotely, that all processes are running smoothly.

In order to be at your side at all times, from planning (Web Select) to monitoring (Adam), we have developed two software packages, which we make available to you free of charge.



Adam
Application for Documentation and Monitoring

Who's Adam?

This is the new app that records your **cosmotec** units and imports them onto your mobile devices. Thanks to Adam you will have access to our entire sales and technical documentation.
It's also possible to organise, monitor and report faults for for all **cosmotec** units equipped with a SEC.blue electronic controller or integrated Ethernet port.

Why using Adam?

So you always have all the information at your fingertips, reducing the time needed for commissioning, maintenance, analysis and troubleshooting.

Downloading Adam

- via smartphone or tablet iOS e Android (Google Play Services requires for geolocalization & OCR): download at **https://app.stulz.it**
- With a PC running Windows (in the versions currently supported by Microsoft on x86-64 architecture) download at **https://app.stulz.it/Adam.msi**



Helping you choose

Designing a refrigeration system for industrial applications requires specific skills, which we have decided to make more accessible thanks to XShark, an **easy-to-use refrigeration system design software**. The specific characteristics of each project determine particular refrigeration needs and requirements: by entering the relevant data of your application, the XShark design software will process and present you with the most suitable proposals. We are of course available for specific advice or support in using this free tool!

XShark includes the following **cosmotec** ranges:

- WLA Compact
- WRA ErP
- WLA Precision ERP
- WPA Techno
- WPAmini Techno
- WSA/WSI Techno
- WSW Techno

How to use XShark

First you have to download the programme on **https://cosmotec.it/software/xshark/**. Then just follow the instructions, in case you need it, there is a guide with all the information.

4plant

The smart cooling solution!

4.plant is able to optimise your systems and, thanks to constant monitoring, guarantees continuity of service and improved performance, while reducing energy consumption and ecological impact



Service continuity
Guarantee of stable service even in the face of possible anomalies

Energy savings
Thanks to advanced optimization strategies for units and systems

Application flexibility
While maintaining their own identity, the logic sequences and graphical interface are adaptable to the needs of the system

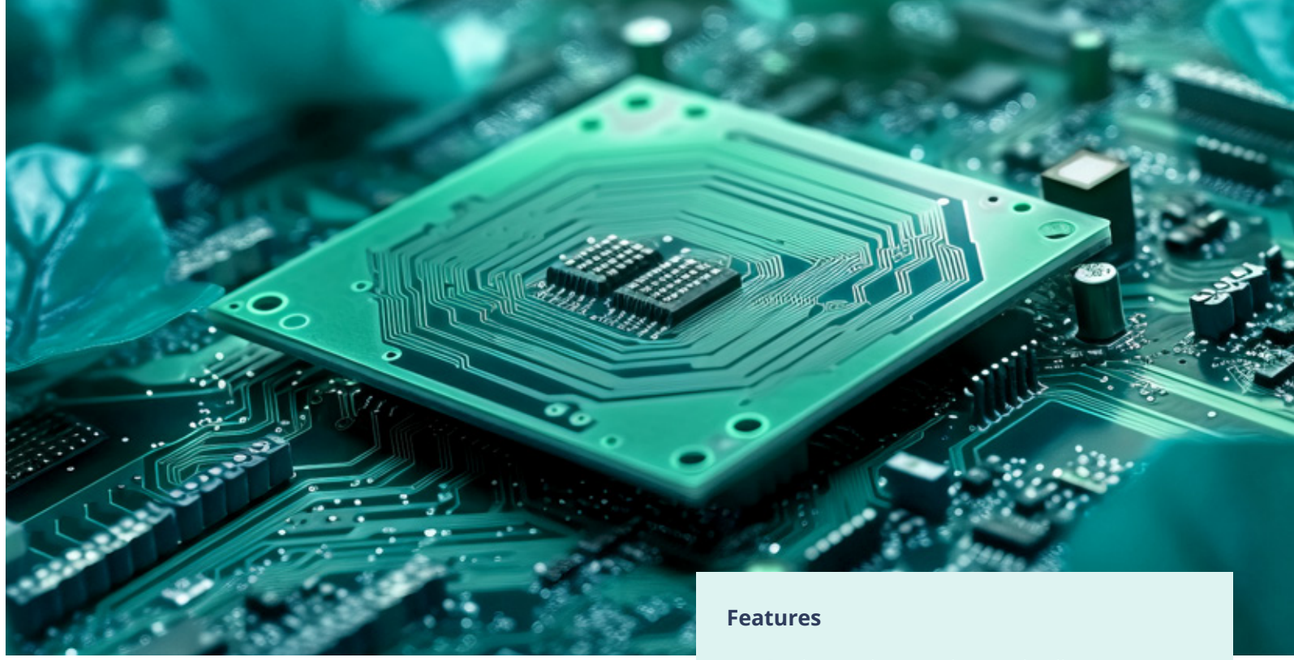
Performance maintenance
Ensures the same level of performance over time and significantly increases the overall lifespan of the entire system

Continuous improvement
Through analysis and reporting tools, it allows for a better understanding of the system/unit and helps identify improvement strategies

Simplified operation
The ability to manage complex systems even by non-highly specialized personnel

Monitoring and integration
Information easily accessible, with clear and comprehensible graphical layouts, both locally and remotely. Maximum transparency towards third parties

Economic investiment
4.plant guarantees a reduction in service and maintenance-related costs and enables the acquisition of credits for energy certifications based on efficiency, increasing the site's value



4.plant represents the most advanced evolution of monitoring, control, and optimization systems for industrial hydronic installations

In industrial and process applications, reliability has always been a cornerstone in ensuring service continuity. Today, another fundamental driver is efficiency, essential for meeting stringent energy standards.

This product is the result of combined hardware and software components, all bound by the same reliability, allowing installations to operate at their best, enhancing performance and uptime.

Features

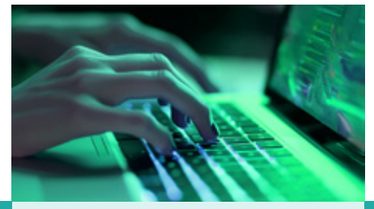
- Real-time data reading and collection
- Monitoring and supervision of units and field components
- Comparison of operating performance against project data
- Reactive optimized control for each installed component
- Dynamic management based on measurements.
- Generation of specific energy reports
- Availability of preconfigured and customizable graphs with historical trends of variables
- Access to the graphical interface via web on PCs and mobile devices
- Local and remote connection while adhering to current security policies

The system ensures the management and control of each individual component directly involved in the production and distribution of refrigeration energy. This includes refrigeration units, pumping groups, and any energy utilization systems, thereby creating synergy among the various parts of the installation to achieve a more efficient cooling process.

How we ensure maximum efficency



Optimized control
Load management
Free cooling maximized
Fluid distribution



Maintenance
Monitoring
Diagnostics
Reporting



Sharing
Connectivity
Integration

Industrial Chiller

How and why to choose an industrial chiller for your applications

What is an industrial chiller?

Industrial water chillers are used in a variety of applications where chilled water or fluid is circulated through process equipment.

They are characterised by an immediate response to changing load requirements, the ability to modulate their cooling capacity, high control accuracy and reliability even within the limits of their operating conditions.

Industrial chillers are commonly used to cool products and machinery in a multitude of different applications including injection moulding, machine tools, lasers, food, beverage, semi-conductors and more.

What is the difference between air conditioning chillers and process chillers?

Process chillers are designed to operate at different temperatures, with different fluids and varying flow rates. They have the possibility of integrating several pumps and several hydraulic and cooling circuits; they normally also include a hydraulic tank to compensate for sudden variations in the thermal load on the user side.

This flexibility of use and the high level of reliability are the main factors that differentiate it from air conditioning chillers. The energy efficiency assessment of an industrial chiller follows the rules of European Regulation (EU) 2016/2281 for high temperature chillers (SEPR HT) and (EU) 2015/1095 for medium temperature chillers (SEPR MT).

Why an industrial chiller?

No industrial process, machine or engine is 100% efficient and heat is the most common by-product of these inefficiencies. If this heat is not removed, it can cause downtime and even premature failure. It is therefore necessary to include cooling in the design of an industrial process to avoid these problems and increase its efficiency and reliability.



WLA Compact
Air cooled
1,41 - 5.05 kW
R134A
Compressor rotary/scroll
pag. 14



WLA Compact R1234yf
Air cooled
1 - 5 kW
R1234yf
pag. 16



WRA ErP
Air cooled
5 - 47,5 kW
ErP2021 - R410A - R134A
Scroll compressor
pag. 18



WRA ErP R513A
Air cooled
16 - 32 kW
R513A
pag. 18



WLA Precision R32
Air cooled
50 - 160 kW
ErP2021- F-GAS 2024/573
R32
Outdoor
Scroll compressor
pag. 24



WPA Techno
Air cooled
165 - 560 kW
ErP2021 - R410A - R454B
Scroll compressor
pag. 28



WPA Mini Techno
Air cooled
95 - 170 kW
ErP2021 - R410A
Scroll compressor
pag. 28



WSA/WSI Techno
Air cooled
280 - 1860 kW
ErP2021 - R513A - R1234ZE
Screw compressor
pag. 32



WSW Techno
Water cooled
236 - 1529 kW
ErP2021 - R513A
Screw compressor
pag. 40

WLA Compact

Air cooled - 1,41 - 5.05 kW
R134A - Scroll compressor

Reliability and Precision

The performance of modern **industrial processes** is closely influenced by variations in their operating temperature and can be compromised by dangerous overheating.
The new **WLA Compact** industrial chillers are designed to provide **accurate temperature control** of the process fluid and **reliable operation** in a wide range of industrial applications such as: cooling of machine tools, lasers, presses, extruders, and for the chemical, pharmaceutical, food and medical sectors.

Main Features

- Cooling capacity: 1.41 to 5.05 kW
- Power supply: 230V - 1ph - 50/60 Hz
  400V - 3ph - 50 Hz
- 460V - 3ph - 60Hz
- Operating limits - Standard chiller:
- Outlet water temperature: -5°/+1°C ÷ +13°/+30°C;
- Ambient air temperature: min/max +15°/+45°C
- WLA Compact Process Chillers do not fall within the applicability range of the MT (Medium Temperature – EU 2015/1095) and HT (High Temperature – EU 2016/2281) regulations.

Technical features - Cooling Circuit

- Cooling fluid R134A
- Piston (mod. 02-03), rotary (mod. 05-08) or scroll (mod. 10-13) compressor
- Plate heat exchangers optimised for high evaporation temperatures
- Finned coil condensers protected by a metal anti-particulate filter and with reduced tube diameter (they reduce the refrigerant charge by about 20%)
- HP high pressure switch with manual reset
- Thermostatic lamination valve

Technical features - Hydraulic Circuit

- Atmospheric pressure hydraulic circuit constructed from non-ferrous materials
- New HDPE inertia tank with increased volume equipped with visual level indicator, filling/draining connections and overflow
- Automatic bronze bypass valve as standard
- Standard flow switch
- Pressure gauge 0-6 barg



WLA02-03-05

CODE		M.U.	WLA02	WLA03	WLA05
Cooling Capacity (1)	@50Hz	kW	1,41	1,61	2,50
Cooling Capacity	@60Hz	kW	1,58	1,80	2,80
Absorbed power	@50Hz	kW	0,60	0,71	0,74
EER (without pump) (1)	@50Hz		2,4	2,3	3,4
Evaporator water flow	@50Hz	l/min	4,0	4,6	7,2
Evaporatror pressure drop	@50Hz	kPa	12,0	15,3	10,5
Evaporator water flow	@60Hz	l/min	4,5	5,2	8,0
Evaporatror pressure drop	@60Hz	kPa	15,1	19,2	13,1
Electrical data					
Power Supply		V-ph-Hz	230-1-50/60	230-1-50/60	230-1-50/60
					400-3-50
					460-3-60
Auxiliaries feed		V-ph-Hz	230-1-50/60	230-1-50/60	230-1-50/60
IP Protection Degree			40	40	40
Technical Data					
N° Compressors /N° Cooling circuits			1/1	1/1	1/1
N° Axial fans			1	1	1
Condenser fan air flow	@50Hz	m^3/h	1820	1820	1820
Fan absorbed power	@50Hz	kW	0,13	0,13	0,13
Available head P3 Pump	@50Hz	bar	2,4	2,3	3,9
Pump P3 absorbed power		kW	0,37	0,37	0,55
Noise level (2)		dB(A)	64,1	64,1	61,9
Hydraulic connections		Ø	1/2"	1/2"	1/2"
Tank volume		dm^3	8	8	20
Height x Width x Depth	HxWxD	mm	477x601x517	477x601x517	527x801x632
Empty weight		kg	54,3	54,3	75,4

(1) Operating limits for standard chiller: outlet water temperature: +13°/+30°C; ambient air temperature min/max +15°/+45°C
(2) Sound pressure at 1m: average value obtained in a free field on a reflecting plane at a distance of 10m from the unit according to EN ISO 9614-2. Values with tolerance ± 2 dB.
(3) Empty weight of the unit with tank and P3 pump without options/kit. Tolerance +/- 10%
Refrigerant R134a

WLA08-10-13

CODE		M.U.	WLA08	WLA10	WLA13
Cooling Capacity (1)	@50Hz	kW	3,24	4,12	5,05
Cooling Capacity	@60Hz	kW	3,63	4,61	5,66
Absorbed power	@50Hz	kW	0,93	1,34	1,67
EER (without pump) (1)	@50Hz		3,5	3,1	3,0
Evaporator water flow	@50Hz	l/min	9,3	11,8	14,5
Evaporatror pressure drop	@50Hz	kPa	16,4	25,0	36,3
Evaporator water flow	@60Hz	l/min	10,4	13,2	16,2
Evaporatror pressure drop	@60Hz	kPa	20,5	31,4	45,5
Electrical data					
Power Supply		V-ph-Hz	230-1-50/60	230-1-50/60	230-1-50/60
			400-3-50	400-3-50	400-3-50
			460-3-60	460-3-60	460-3-60
Auxiliaries feed		V-ph-Hz	230-1-50/60	230-1-50/60	230-1-50/60
IP Protection Degree			40	40	40
Technical Data					
N° Compressors /N° Cooling circuits			1/1	1/1	1/1
N° Axial fans			1	1	1
Condenser fan air flow	@50Hz	m^3/h	1820	3415	3415
Fan absorbed power	@50Hz	kW	0,13	0,30	0,30
Available head P3 Pump	@50Hz	bar	3,7	3,4	3,2
Pump P3 absorbed power		kW	0,55	0,55	0,55
Noise level (2)		dB(A)	61,9	71,8	71,8
Hydraulic connections		Ø	1/2"	1/2"	1/2"
Tank volume		dm^3	20	20	20
Height x Width x Depth	HxWxD	mm	527x801x632	527x801x632	527x801x632
Empty weight		kg	75,4	75,4	75,4

(1) Operating limits for standard chiller: outlet water temperature: +13°/+30°C; ambient air temperature min/max +15°/+45°C
(2) Sound pressure at 1m: average value obtained in a free field on a reflecting plane at a distance of 10m from the unit according to EN ISO 9614-2. Values with tolerance ± 2 dB.
(3) Empty weight of the unit with tank and P3 pump without options/kit. Tolerance +/- 10%
Refrigerant R134a

WLA Compact R1234yf

Air cooled - 1 - 5 kW

NEW

Reliability and Precision

The performance of modern **industrial processes** is closely influenced by variations in their operating temperature and can be compromised by dangerous overheating.
The new **WLA Compact** industrial chillers are designed to provide **accurate temperature control** of the process fluid and **reliable operation** in a wide range of industrial applications such as: cooling of machine tools, lasers, presses, extruders, and for the chemical, pharmaceutical, food and medical sectors.

Main Features

- Cooling capacity: 1 to 5 kW
- Power supply: 230V - 1ph - 50/60 Hz
  400V - 3ph - 50 Hz
- 460V - 3ph - 60Hz
- Operating limits - Standard chiller:
- Outlet water temperature:
  -5°/+1°C (WLA 10/13) ÷ +13°/+30°C;
- Ambient air temperature: min/max -5°/+45°C

Technical features - Cooling Circuit

- Cooling fluid R1234yf
- Plate heat exchangers optimised for high evaporation temperatures
- Finned coil condensers protected by a metal anti-particulate filter and with reduced tube diameter (they reduce the refrigerant charge by about 20%)
- HP high pressure switch with manual reset
- Thermostatic lamination valve

Technical features - Hydraulic Circuit

- Atmospheric pressure hydraulic circuit constructed from non-ferrous materials
- New HDPE inertia tank with increased volume equipped with visual level indicator, filling/ draining connections and overflow
- Automatic bronze bypass valve as standard
- Standard flow switch
- Pressure gauge 0-6 barg



WLA02-03-05-08-10-13

CODE		M.U.	WLA02	WLA03	WLA05
Cooling capacity (1)		W	1400/1568	1600/1792	2500/2800
Absorbed electrical power (standard version)	230-1-50/60Hz	kW	1275/1440	1285/1570	1695/2270
	230-1-50Hz	kW	--	--	--
	400-3-50, 460-3-60	kW	--	--	1725/2280
Power supply		V-ph-Hz	230-1-50/60	230-1-50/60	230-1-50/60
					400-3-50, 460-3-60
Electrical panel IP rating			54	54	54
Sound pressure (2)		dB(A)	60	60	62
Hydraulic connections		Ø	1/2''	1/2''	1/2''
Tank volume		l	9	9	27
Height x Width x Depth		mm	513x641x513	513x641x513	613x874x672

CODE		M.U.	WLA08	WLA10	WLA13
Cooling capacity (1)		W	3200/3584	4100/4592	5100/5712
Absorbed electrical power (standard version)	230-1-50/60Hz	kW	1935/2560	--	--
	230-1-50Hz	kW	--	3030	3670
	400-3-50, 460-3-60	kW	1955/2530	2980/3850	3770/4790
Power supply		V-ph-Hz	230-1-50/60	230-1-50	230-1-50
			400-3-50, 460-3-60	400-3-50, 460-3-60	400-3-50, 460-3-60
Electrical panel IP rating			54	54	54
Sound pressure (2)		dB(A)	62	67	67
Hydraulic connections		Ø	1/2''	1/2''	1/2''
Tank volume		l	27	27	27
Height x Width x Depth		mm	613x874x672	613x874x672	613x874x672

(1) Water inlet/outlet temperature 20/15 °C, outdoor air temperature 32°C. Operating limits for standard chiller: Outlet water temperature: +13°/+30°C; Ambient air temperature min/max -5°/+45°C
(2) Sound pressure level derived from the sound power level in accordance with EN ISO 3744 and declared under the following conditions: at 1 m distance from the unit, in free field, with the unit installed on a reflective base, operating under nominal conditions and at full load, for the standard unit (no options)

Options

- **Level switch**: einstallation of an electric level switch in the tank with intervention at 1/3 of tank capacity. The intervention of the electric level act as safety device, interrupting the working of the pump and of the pre-heating resistance in the tank, to avoid damages of the chillers.
- **Pre-heating resistence:** iInstallation of an armoured heating element immersed in the tank. The option requires the installation of the "electrical level" to interrupt the functioning with lack of water.
- **Under-user installation**: installation of an electro-valve on hydraulic return in the tank. It allows the installation of the chiller with free water level tank under application level, avoiding the overflowing of the tank when the pump is stopped.
- **Low ambient temperature -10°C:** installation of a differential pressure switch for the control of the modulation condenser fan. The kit allows the expansion of chiller working ambient temperature limit from +2,5°C until -10°C ambient temperature (with water added with proper amount of glycol).
- **Laser version**: regulation system which integrates a hot gas bypass valve for cooling power regulation and a microprocessor control ensuring a standard hysteresis of ±1K
- **Differential T° control:** installation of an external probe. It allows the chase of the temperature read by the external probe, imposing a minimum and maximum temperature limit. When these limits will be reached, the chiller will not change the temperature until the joining of the temperature chase range.
- **Aluminium air filter:** metallic filter made by four layers of 99.5% aluminum mesh
- **Low temperature fluid (WLA10/13)**: version suitable for the production of glycol water at low temperatures down to -5°C. Includes: hydraulic circuit insulation.

Accessories

- **Y water filter kit**: Y" Filter 1/2" F GAS n + Reducing 1/2" brass
- **External flow switch kit:** flow switch 3 ÷ 24 l/min - 1/2" F x 1/2" F + curve 90° 1/2"F x 1/2"F brass + reduced nipple 1/2"F x 1/2"F brass
- **Lifting eyebolt kit**: N° 4 galvanized steel eye-bolts M8
- **Wheel kit**: N°2 rubbers revolving wheel ø50 mm, bolt M8x15 mm + N° 2 rubbers revolving wheel ø50 mm, bolt M8x15 mm, whit brake
- **Serial port RS485**: RS485 serial port for remote monitoring bu Modbus protocol
- **Manual filling kit**: curved Polypropylene Hose Holder 1"Mx32

WRA ErP

Air cooled - 5 - 47,5 kW
ErP2021 - R410A - R134A - Scroll compressor

Reliability and energy efficiency

The WRA ERP liquid chillers are the result of a design that has focused on **reliability**, **energy efficiency**, **extended operating limits** and **extreme configurability**. Thanks to dedicated technological solutions such as the oversized heat exchangers, the standard electronic expansion valve and the high efficiency fans, each configuration of the WRA ERP chillers is characterized by high thermodynamic performances that **exceed the most stringent minimum energy efficiency requirements** imposed by the Ecodesign directive starting from 2021.

Energy Efficiency

Process chillers work with high heat loads continuously throughout the year. It is therefore very important that the chiller guarantees the highest performance under all operating conditions. All WRA chillers comply with the limits required by ErP2021 - SEPR HT (EU) 2016/2281 - SEPR MT (EU) 2015/1095, making them the best solution for all process applications

Extended operating limits

Thanks to the dedicated versions and accessories, operation at full load is guaranteed up to +45 °C outside air temperature during the summer season and -20 °C during the winter season in the LT version. Standard WRA ErP units produce chilled water with a maximum evaporator outlet temperature of up to +30 °C; minimum standard temperature +5 °C and -10 °C in the BRINE version.

New Configurations

The new LT versions for low ambient temperature -20°C, the Brine version for low water outlet temperature Tw-10°C, and the new version for pressurised hydraulic circuits expand the technical equipment of the WRA ErP range, which is therefore able to meet the most varied application requirements, guaranteeing maximum safety of the production process in which the chiller is integrated.The Process version (mod.0A-5A) includes a shell and tube evaporator.

General Features

- Cooling Capacity 5 – 47,5 kW
- Power Supply: 400Vac - 3ph - 50Hz
  460Vac - 3ph - 60Hz
- Refrigerant: R134a (mod.13-18) R410A (mod.20-5A)
- IP54 Protection Degree: suitable for outdoor installation
- Scroll compressors
- Plate/shell evaporator
- Non-Ferrous Hydraulic Circuit
- Condenser with finned coil



WRA13-18-20-25

CODE		M.U.	WRA13	WRA18	WRA20	WRA25
Cooling Capacity (1)	@50Hz	kW	4,67	5,87	7,34	8,66
Absorbed Power ca (1)	@50Hz	kW	1,10	1,49	1,93	2,33
Evaporator water flow (1)	@50Hz	l/min	13,4	16,8	21,0	24,8
EER (without pump) (1)			4,2	3,9	3,8	3,7
SEPR HT (3)			5,38	5,42	5,45	5,18
Cooling Capacity (2)	@50Hz	kW	3,40	4,35	5,63	6,58
Absorbed Power (2)	@50Hz	kW	1,13	1,50	1,95	2,41
Evaporator water flow (2)	@50Hz	l/min	9,7	12,5	16,1	18,9
EER (without pump) (2)	@50Hz		3,0	2,9	2,9	2,7
Electrical data						
Power Supply		V-ph-Hz	400/3/50	400/3/50	400/3/50	400/3/50
Power Supply		V-ph-Hz	400/3/50 - 460/3/60			
Auxiliaries feed		V-ph-Hz	24VAC	24VAC	24VAC	24VAC
IP Protection Degree			IP54	IP54	IP54	IP54
Technical Data						
N° Compressors / N° Cooling circuits			1/1	1/1	1/1	1/1
N° Axial Fans			1	1	1	1
Pump P3 absorbed power	@50Hz	kW	0,46	0,46	0,46	0,46
Noise Level (4)		dB(A)	37,5	37,5	40,4	40,4
Hydraulic connections		Ø	3/4"G	3/4"G	3/4"G	3/4"G
Tank Volume		dm^3	40	40	40	40
Height		mm	1290	1290	1310	1310
Width		mm	560	560	560	560
Depth		mm	720	720	720	720
Operating weight (5)		kg	178	185	188	190
Shipping weight (5)		kg	133	140	143	145

(1) Data referring to outlet water inlet temperature 20/15°C - Air temperature 32°C. @50Hz
(2) Data referring to outlet water inlet temperature 12/7°C - Air temperature 35°C. @50Hz
(3) Data declared according to European Regulation (EU) 2016/2281 for high temperature process chillers
(4) Sound pressure at 10m: average value obtained in a free field on a reflecting plane at a distance of 10m from the unit according to EN ISO 9614-2. Values with tolerance ± 2 dB.
(5) Weight of the unit with tank and P3 pump without options/kit. Tolerance +/-10%.

WRA30-35-50

CODE		M.U.	WRA30	WRA35	WRA50
Cooling Capacity (1)	@50Hz	kW	11,78	13,66	16,66
Absorbed Power ca (1)	@50Hz	kW	2,82	3,31	4,45
Evaporator water flow (1)	@50Hz	l/min	33,8	39,2	47,8
EER (without pump) (1)			4,2	4,1	3,7
SEPR HT (3)			5,52	5,54	5,37
Cooling Capacity (2)	@50Hz	kW	9,01	10,3	12,66
Absorbed Power (2)	@50Hz	kW	2,92	3,395	4,42
Evaporator water flow (2)	@50Hz	l/min	25,8	29,5	36,3
EER (without pump) (2)	@50Hz		3,1	3,0	2,9
Electrical data					
Power Supply		V-ph-Hz	400/3/50	400/3/50	400/3/50
Power Supply		V-ph-Hz	400/3/50 - 460/3/60		
Auxiliaries feed		V-ph-Hz	24VAC	24VAC	24VAC
IP Protection Degree			IP54	IP54	IP54
Technical Data					
N° Compressors / N° Cooling circuits			1/1	1/1	1/1
N° Axial Fans			1	1	1
Pump P3 absorbed power	@50Hz	kW	0,69	0,69	0,69
Noise Level (4)		dB(A)	46,9	46,9	47,9
Hydraulic connections		Ø	1"G	1"G	1"G
Tank Volume		dm^3	98	98	98
Height		mm	1550	1550	1550
Width		mm	740	740	740
Depth		mm	930	930	930
Operating weight (5)		kg	311	311	314
Shipping weight (5)		kg	201	200	204

(1) Data referring to outlet water inlet temperature 20/15°C - Air temperature 32°C. @50Hz
(2) Data referring to outlet water inlet temperature 12/7°C - Air temperature 35°C. @50Hz
(3) Data declared according to European Regulation (EU) 2016/2281 for high temperature process chillers
(4) Sound pressure at 10m: average value obtained in a free field on a reflecting plane at a distance of 10m from the unit according to EN ISO 9614-2. Values with tolerance ± 2 dB.
(5) Weight of the unit with tank and P3 pump without options/kit. Tolerance +/-10%.

WRA55-65-80-90

CODE		M.U.	WRA55	WRA65	WRA80	WRA90
Cooling Capacity (1)	@50Hz	kW	19,49	22,26	27,05	31,82
Absorbed Power ca (1)	@50Hz	kW	4,59	5,25	6,73	7,79
Evaporator water flow (1)	@50Hz	l/min	55,9	63,8	77,5	91,2
EER (without pump) (1)			4,25	4,24	4,02	4,09
SEPR HT (3)			6,37	5,76	5,69	5,53
Cooling Capacity (2)	@50Hz	kW	14,9	17,1	20,96	24,65
Absorbed Power (2)	@50Hz	kW	4,65	5,3	6,65	7,68
Evaporator water flow (2)	@50Hz	l/min	42,7	49,0	60,1	70,7
EER (without pump) (2)	@50Hz		3,20	3,2	3,2	3,21
Electrical data						
Power Supply		V-ph-Hz	400/3/50	400/3/50	400/3/50	400/3/50
Power Supply		V-ph-Hz	400/3/50 - 460/3/60			
Auxiliaries feed		V-ph-Hz	24VAC	24VAC	24VAC	24VAC
IP Protection Degree			IP54	IP54	IP54	IP54
Technical Data						
N° Compressors / N° Cooling circuits			1/1	1/1	1/1	1/1
N° Axial Fans			1	1	1	1
Pump P3 absorbed power	@50Hz	kW	0,92	0,92	1,31	1,31
Noise Level (4)		dB(A)	41,9	42,5	44,3	43,9
Hydraulic connections		Ø	1"1/4 G	1"1/4 G	1"1/4 G	1"1/4 G
Tank Volume		dm^3	180	180	180	180
Height		mm	1992	1992	1992	1992
Width		mm	895	895	895	895
Depth		mm	1175	1175	1175	1175
Operating weight (5)		kg	560	572	572	580
Shipping weight (5)		kg	400	412	412	420

(1) Data referring to outlet water inlet temperature 20/15°C - Air temperature 32°C. @50Hz
(2) Data referring to outlet water inlet temperature 12/7°C - Air temperature 35°C. @50Hz
(3) Data declared according to European Regulation (EU) 2016/2281 for high temperature process chillers
(4) Sound pressure at 10m: average value obtained in a free field on a reflecting plane at a distance of 10m from the unit according to EN ISO 9614-2. Values with tolerance ± 2 dB.
(5) Weight of the unit with tank and P3 pump without options/kit. Tolerance +/-10%.

WRA0A-5A

CODE		M.U.	WRA0A*	WRA5A*	WRA0A**	WRA5A**
Cooling Capacity (1)	@50Hz	kW	39,94	48,16	39,48	47,39
Absorbed Power ca (1)	@50Hz	kW	8,67	11,26	8,65	11,20
Evaporator water flow (1)	@50Hz	l/min	114,5	138,1	113,2	135,9
EER (without pump) (1)			4,61	4,28	4,56	4,23
SEPR HT (3)			5,92	5,66	5,8	5,51
Cooling Capacity (2)	@50Hz	kW	30,67	37,22	29,94	36,09
Absorbed Power (2)	@50Hz	kW	8,61	11,07	8,58	10,96
Evaporator water flow (2)	@50Hz	l/min	87,9	106,7	85,8	103,5
EER (without pump) (2)	@50Hz		3,56	3,36	3,49	3,29
Electrical data						
Power Supply		V-ph-Hz	400/3/50	400/3/50	400/3/50	400/3/50
Power Supply		V-ph-Hz	400/3/50 - 460/3/60			
Auxiliaries feed		V-ph-Hz	24VAC	24VAC	24VAC	24VAC
IP Protection Degree			IP54	IP54	IP54	IP54
Technical Data						
N° Compressors / N° Cooling circuits			1/1	1/1	1/1	1/1
N° Axial Fans			2	2	2	2
Pump P3 absorbed power	@50Hz	kW	1,76	1,76	1,76	1,76
Noise Level (4)		dB(A)	45,4	47	45,4	47,00
Hydraulic connections		Ø	1"1/2 G	1"1/2 G	1"1/2 G	1"1/2 G
Tank Volume		dm^3	300	300	250	250
Height		mm	2074	2074	2074	2074
Width		mm	1140	1140	1140	1140
Depth		mm	2084	2084	2084	2084
Operating weight (5)		kg	890	910	950	970
Shipping weight (5)		kg	610	630	710	730

* STANDARD version with plate evaporator
** PROCESS version with shell and tube evaporator
(1) Data referring to outlet water inlet temperature 20/15°C - Air temperature 32°C. @50Hz
(2) Data referring to outlet water inlet temperature 12/7°C - Air temperature 35°C. @50Hz
(3) Data declared according to European Regulation (EU) 2016/2281 for high temperature process chillers
(4) Sound pressure at 10m: average value obtained in a free field on a reflecting plane at a distance of 10m from the unit according to EN ISO 9614-2. Values with tolerance ± 2 dB.
(5) Weight of the unit with tank and P3 pump without options/kit. Tolerance +/-10%.

WRA ErP R513A

Air cooled - 16-32 kW - R513A

NEW

Reliability and energy efficiency

The WRA ERP liquid chillers are the result of a design that has focused on **reliability**, **energy efficiency**, **extended operating limits** and **extreme configurability**. Thanks to dedicated technological solutions such as the oversized heat exchangers, the standard electronic expansion valve and the high efficiency fans, each configuration of the WRA ERP chillers is characterized by high thermodynamic performances that **exceed the most stringent minimum energy efficiency requirements** imposed by the Ecodesign directive starting from 2021.

Energy Efficiency

Process chillers work with high heat loads continuously throughout the year. It is therefore very important that the chiller guarantees the highest performance under all operating conditions. All WRA chillers comply with the limits required by ErP2021 - SEPR HT (EU) 2016/2281, making them the best solution for all process applications

Extended operating limits

Full-load operation is guaranteed at maximum outdoor temperatures up to 45°C and minimum down to -20°C with the LT version (where available). Standard WRA units produce chilled water with evaporator outlet temperature between +5°C and +30°C (down to -5/-10°C in the Brine version).

Versions

- Standard version
- LT version for low ambient temperature -20°C
- Brine version for low outlet temperature -5/-10°C
- Version for pressurized hydraulic circuit

General Features

- Cooling Capacity: 16-32 kW
- Power Supply: 400Vac - 3ph - 50Hz
  460Vac - 3ph - 60Hz
- Refrigerant: R513A
- IP54 Protection Degree: suitable for outdoor installation
- Scroll compressors
- Plate/shell evaporator
- Non-Ferrous Hydraulic Circuit
- Condenser with finned coil



R513A

WRA R513A 50-55-65-80-90

CODE		M.U.	WRA50	WRA55	WRA65	WRA80	WRA90
Cooling Capacity (1)	@50Hz	kW	16,23	19,19	22,02	27,92	31,92
Power Input (1)	@50Hz	kW	4,28	4,61	5,33	7,08	8,44
Evaporator Water Flow Rate (1)	@50Hz	l/min	46,5	55	63,1	80	91,5
Cooling Capacity (2)	@50Hz	kW	12,11	14,33	16,28	20,8	23,9
Power Input (2)	@50Hz	kW	4,25	4,68	5,24	7,08	8,19
SEPR HT According to (EU) 2016/2281			5,01	5,45	5,06	5,13	5,25
Evaporator Water Flow Rate	@50Hz	l/min	34,7	41,1	46,7	59,6	68,5
Power Supply		V-ph-Hz	400/3/50				
No. of compressors / No. of refrigeration circuits			1/1	1/1	1/1	1/1	1/1
No. of axial fans			1	1	1	1	1
Maximum Pump Power P3	@50Hz	kW	6,69	6,84	10,15	13,45	15,25
Sound Pressure (3)		dB(A)	46,7	48,2	44,5	45,8	47,7
Hydraulic connections		"	1	1"1/4	1"1/4	1"1/4	1"1/4
Tank volume		dm3	100	180			
Height		mm	1648	2019	2019	2019	2019
Width		mm	735	895	895	895	895
Depth		mm	930	1175	1175	1175	1175
Operating weight (4)		kg	350	590	610	620	625
Empty weight (4)		kg	270	420	440	450	455

(1) Data referred to: Inlet/outlet water temp. 20/15°C – Air temp.: 32°C
(2) Data referred to: Inlet/outlet water temp. 12/7°C – Air temp.: 35°C
(3) Sound pressure at 10 m according to EN ISO 9614-2
(4) Unit weight in tank + pump P3 configuration without options/accessories. Tolerance ±10%

Opzions

- **Under-user level installation**: it allows the installation of the chiller with free water level tank under application level, avoiding the overflowing of the tank when the pump is stopped.
- **Flow switch**: it allows the constant monitoring of the fluid circulation in the chiller and cooling water circuits. It reports an eventual absence of fluid circulation, to avoid the freezing of the evaporator.
- **Automatic filling system**: kit for the automatic filling of the tank, installed on water adduction piping and it's main function is to maintain stable the pressure of the plant, to a pre-fixed value, automatically providing water in-taking. Two models are available, one for version with atmospheric tank and one for version with pressure tank.
- **Increased thermal insulation**: when this option is orderer the unit is supplied with higher insulated components of the hydraulic circuit (as volute pump, hydraulic fittings, ...) with thermoformed expanded polyethylene shells with closed cells and thickness of 15 mm. This option includes also piping insulation with insulated pipes with thickness of 13 mm. All the insulation material is anti-UV and can e used outdoor.
- **Multi-pole connector**: it's made of 1 male connector installed on the rear part of the chiller and of 1 female connector shipped loose. They allow the rapid connection of the power supply and of the signals (general alarm, remote on/off, etc...) to the chiller.
- **Electric preheating**: installation of a three-phase armoured heating element immersed in the tank.
- **Remote ambient probe (10m cable)**: when this option is ordered a remote ambient temperature is supplied with the unit, with cable length of 10 meters out of the unit.
- **Serial port RS485**: the unit control is supplied with an RS485 serial port (there is a little bag into the electrical panel). Cable is supplied, which is used to connect to the RS485 serial port of the Eliwell thermostat. Also supplied are two adhesive collar supports and the corresponding cable ties, which can be used to tie the cable inside the machine's electrical cabinet.
- **Polyuretane condenser air filter**: when this option is ordered, a polyurethane air filter is mounted on the unit. It has a frame in galvanized sheet 0,6 mm thick, filter made with soft polyurethane M6/20 and aluminium net on each side.
- **Aluminium condenser air filter**: when this option is ordered, an aluminium air filter is mounted on the unit. It has a frame in galvanized sheet 0,6 mm thick and aluminium net on each side.
- **Lifting eyebolts/tubes**: from WRA13 to WRA90: the unit is supplied with 4 eyebolts mounted in the upper part of the unit, in order to allow easy handling with ropes. For WRA 0A-5A: the unit is equipped with 2 lifting pipes, mounted in the lower part of the unit. Find below a picture of the pipe.
- **Manometers**: High and low pressure gas manometers for monitoring refrigerant gas pressure
- **Water filter for laser version**: 100µm polypropylene filter element. The cartridge container is made of AISI304 stainless steel with NBR gaskets. The filters are equipped with a manual vent valve at the top and a drain valve at the bottom

Accessories

- **Water filter kit to be installed outside the unit**: is composed by: the cartridge, the holder and the header. The cartridge is made of stainless steel AISI 304 or polypropylene. The meshes and the structure permit a uniform water flow and few load losses.
- **External flow switch kit**: allows the constant monitoring of the fluid circulation in the chilled water circuits. It reports an eventual absence of fluid circulation.
- **Aluminium condenser air filter kit:** aluminium air filter and screws and upper supports for the installation
- **Polyuretane condenser air filter kit**: polyuretane air filter and screws and upper supports for the installation
- **Lifting eyebolt/tubes kit**: 4 eyebolts or 2 pipes, in according to the unit, to allow movement of the unit.
- **Wheels kit**: kit composed by wheels and screws and supports for the installation
- **Feet adjustable in height kit**: kit composed by levelling foots,galvanised nuts and galvanized washers
- **Remote ambient probe kit (10mt)**: it's a remote air temperature probe with 10m cable.
- **Remote controller kit (duplicates on-board display)**: kit consisting of display, cable and installation material
- **Kit bus serial port RS485**:adapter for remote monitoring by Modbus protocol

WLA Precision R32

Air cooled - 60-160 kW
ErP2021 - R32 - Scroll compressor

Compact, reliable, and versatile

The range of **WLA Precision ErP** for outdoor applications industrial liquid chillers is designed to ensure the high reliability standards required by 24/7 manufacturing processes and perfectly meets the needs of applications demanding high quality and reliability standards.
Thanks to careful design and dedicated technological solutions such as high-efficiency evaporators and condensers, the standard electronic expansion valve, and the new high-efficiency axial fans, the **WLA Precision ErP** range stands out for its high performance, surpassing minimum energy efficiency requirements set by the European ErP Ecodesign directive.

Refrigeration Circuit

- Compliance with ErP 2021- SEPR HT (EU) 2016/2281- SEPR MT (EU) 2015/1095 regulations;
- In accordance with F-Gas Regulation 2024/573
- Hermetic scroll compressors protected by a phase sequence control relay and equipped with an oil crankcase heater;
- Refrigerant: R32 (outdoor);
- Plate type evaporators in AISI 316 stainless steel;
- Fin-tube condensers;
- HP/LP pressure switches;
- High-pressure transducer;
- Electronic Expansion Valve EEV;
- Axial fans with PP technopolymer corrosion-resistant blades and electronic speed regulation by phase-cutting;
- High and low-pressure safety valves;

Hydraulic Circuit

- AISI304 inertial tank dustproof with visual level indicator, connections for loading/discharging, overflow, and level switch;
- Automatic hydraulic bypass valve in brass standard;
- Standard adjustable automatic brass hydraulic bypass valve:
- Evaporator antifreeze protection: standard differential pressure switch and antifreeze probe;
- Pressure gauge 0-6 barg;
- Process version with pressurised hydraulic circuit and shell and tube evaporator
- BRINE version -10°C
- LASER version
- LT version -20° ambient

Electrical Panel

- Design and construction in compliance with EN 60204 regulations;
- Main switch with door lock;
- Automatic switches and contactors;
- IP54 protection level: suitable for outdoor installation;
- Phase monitor standard;
- Clean contacts: ON/OFF remote; general alarm;
- Labeled electrical cables;
- Standard active ventilation system: includes a heating resistor and ventilation grilles.



WLA-8A-0B-4B-7B-0C-5C-0D-5D

CODE	WLA8A	WLA0B	WLA4B	WLA7B	WLA0C	WLA5C	WLA0D	WLA5D
Performance @50hz								
Cooling capacity W20-15L32(1) [kW]	60,00	74,00	83,00	99,00	115,00	127,00	143,00	158,00
Power input W20-15L32(2) [kW]	14,48	16,89	18,86	23,24	28,61	27,60	32,41	38,15
EER W20-15L32	4,14	4,38	4,40	4,26	4,02	4,60	4,41	4,14
Cooling capacity W12-7L35(1) [kW]	45,89	57,07	63,98	76,66	90,38	98,76	111,64	124,19
Power input W12-7L35(2) [kW]	14,68	17,93	19,98	24,23	29,31	29,19	33,78	39,24
EER W12-7L35	3,13	3,18	3,20	3,16	3,08	3,38	3,30	3,16
SEPR HT According to (EU) 2016/2281	5,36	5,05	5,24	5,45	5,33	5,42	5,40	5,38
Electrical Data								
Rated power supply [V/ph/Hz]	400/3/50							
Rated auxiliary supply	24 VAC							
Technical Data								
Refrigerant	R32							
No. of compressors/circuits	2 / 1							
No. of fans	2					3		
Fan diameter [mm]	630	800	800	800	800	800	800	800
Air flow rate (single fan) [m³/h]	10800	20700	20700	20100	20100	20100	20100	20100
Sound pressure level at 10 m(7) [dB(A)]	47,0	54,7	52,3	52,9	53,4	54,6	55,0	55,8
Hydraulic connection diameter ["]	2"	2"	2"	2"	2"	2"1/2	2"1/2	2"1/2
Dimensions and Weights								
Transport weight [kg] (tank, pump P3, no accessories)	760	800	840	850	860	1100	1140	1149
Operating weight [kg] (tank, pump P3, no accessories)	1060	1100	1140	1150	1160	1400	1440	1449
Transport weight [kg] (shell and tube exchanger, storage tank, pump P3, no accessories)	1180	1240	1290	1320	1320	1690	1690	1690
Operating weight [kg] (shell and tube exchanger, storage tank, pump P3, no accessories)	1480	1540	1590	1620	1620	2240	2240	2240
Height [mm]	2048	2178	2178	2178	2178	2178	2178	2178
Width [mm]	1135	1135	1135	1135	1135	1135	1135	1135
Depth [mm]	2563	2563	2563	2563	2563	3563	3563	3563
Tank capacity – STD version [dm³]	300							
Tank capacity – PROCESS version [dm³]	250					480		

(1) At the evaporator, according to EN14511-2018
(2) Pump excluded
(3) Data considered with water
(4) W20-15L32
(5) W12-7L35
(6) At maximum speed
(7) Sound power level measured in accordance with EN ISO 9614. The data refer to the standard unit (without options), at full load and under the nominal conditions indicated in the manual.

Options

- **EC fans:** EC axial fans inverter-driven brushless synchronous moto with setpless speed variation from 10% to 100%
- **Protective enclosure for hydraulic/refrigeration vane**: complete panelling of the hydraulic and refrigeration compartments
- **Heating element**: it prevents the icing of chilled water in case the chiller is not running. At certain ambient temperatures and water temperatures, Cosmotec is recommending the use of ethylene or propylene glycol.
- **Automatic filling**: kit for the automatic filling of the tank, installed on water adduction piping. It's main function is to maintain stable the pressure of the plant, to a pre-fixed value, automatically providing water in-taking. Two models are available, one for version with atmospheric tank and one for version with pressure tank.
- **Condensing coil protection grids**: powder-coated anti-intrusion metal grilles, with meshes designed to guarantee the correct air flow in the condensers and simultaneously preventing access to the components of the condensing section of the unit.
- **Aluminium air filter**: aluminium air filters are mounted on the condensing coils of the unit. They have a frame in galvanized sheet 0,6 mm thick and aluminium net on each side.
- **Gas taps safety valves**: when this option is ordered, a shut-off ball valve is used to shut off safety valves in the event of their maintenance or replacement.
- **Electronic flow switch**: it allows the constant monitoring of the fluid circulation in the chilled water circuits. It reports an eventual absence of fluid circulation, to avoid the freezing of the evaporator.
- **Under-user level installation**: it allows the installation of the chiller with free water level tank under application level, avoiding the overflowing of the tank when the pump is stopped.
- **Anticorrosive treatment of condensing coils**: the additional protection treatment of the finned coils guarantees correct functioning in aggressive environments. The treatment is carried out through two phases: pre-painting treatment: the battery fins are made and protected of pre-painted aluminium e painting with acrylic powders: once assembled, the entire exchanger is painted with acrylic powders in RAL 7001 or 7005 color and subjected to a polymerization process in special ovens.

Accessories

- **Aluminium air filter kit**: N°6 or N°10 aluminium air filter and screws and upper supports for the installation
- **Remote ambient probe (10m cable)**: it's a remote air temperature probe with 10m cable.
- **External water filter**: is composed by the cartridge, the holder and the header. The cartridge is the body and the filtering metal mesh, made of stainless steel AISI 304. The meshes and the structure permit a uniform water flow and few load losses.
- **External flow swtich**: allows the constant monitoring of the fluid circulation in the chilled water circuits. It reports an eventual absence of fluid circulation.
- **Antivibration spring kit**: Kit composed of springs in harmonic steel, zinc steel plates containing the springs and jack in zinc steel
- **Antivibration earthquake isolation kit**: the mount main structural components are lid, intermediate plate, base, springs and retaining/anchoring screws.
- **Adjustment feet kit**: kit composed by levelling foots,galvanised nuts and galvanized washers
- **Condensing coil protection grid kit**: powder-coated anti-intrusion metal grilles for preventing access to the components of the condensing section of the unit.
- **Condensing coil and hydraulic vane protection grid kit**: powder-coated anti-intrusion metal grilles for preventing access to the components of the condensing section of the unit and hydraulic compartments

WPA e WPA Mini - Techno Range

Air cooled - Scroll compressor

WPA: 165-560 kW - R410A - R454B / WPA mini: 95-170 kW - R410A

Liquid chillers designed for cooling process applications 24/7, 365 days a year, air-cooled with two refrigeration circuits and scroll compressors installed in tandem/trio optimized for the use of R410A/R454B, plate/tube bundle evaporators, and cooling capacities from 95 kW to 560 kW. Cosmotec's experience in process cooling has led to the development of this range of industrial chillers capable of meeting the broad operational limits (both on the environment and user sides) required by new technologies used for energy saving. All chillers in the WP range feature high levels of energy efficiency (Class A or B) and comply with the limits required by Directive 2009/125/EC Ecodesign ErP 2021.

Refrigeration Circuit

- Cooling capacity: WPA: 165 - 560 kW - WPA mini: 95 - 170 kW
- Refrigerant: R410A (WPAmini / WPA); R454B (WPA)
- Two redundant and independent refrigeration circuits, for maximum reliability
- Brazed plate evaporator in stainless steel AISI 316 (WPAmini 030-055; WPA 060-140)
- Direct expansion shell and tube evaporator (WPA 160-200)
- Micro-Channel condensers entirely made of long-lasting aluminum (HA9153A) and installed in a "V" geometry
- Free Cooling coils copper-aluminum + 2 low-pressure drop modulating two-way valves
- Electronic Expansion Valve (EEV)
- Axial fan with low noise and high fluid dynamic efficiency, with speed regulation via phase-cut module
- High and low-pressure safety valves on the refrigerant side

Hydraulic Circuit

- Pressure accumulation tank in steel, coated with elastomeric insulating material
- Hydraulic circuit composed of painted steel pipes coated with insulating material
- Victaulic© connections for supply and return
- Evaporator anti-freeze protection: standard differential pressure switch and anti-freeze probe

Electrical panel

- Design and construction in compliance with EN 60204 standards
- Main switch with door interlock
- Automatic switches and contactors
- Protection degree IP54: suitable for outdoor installation
- Standard phase monitor
- Clean contacts: remote ON/OFF; general alarm
- Labeled electrical cables
- SEC.blue electronic controller with graphic display (WPAmini) or 7" color Touch-screen display (WPA)

LOW GWP version with low environmental impact

The WPA units (WPAmini on request) are available with low environmental impact R454B refrigerant, which ensures a reduction in global warming potential (GWP = 467). Classified as A2L, R454B is non-toxic but slightly flammable, in PED 1 safety group.

Free Cooling for energy saving

WPA and WPAmini chillers are available in an integrated Free Cooling version, which allows significant energy savings, especially in applications requiring high coolant temperatures (plastics, data centers) and installation in areas with cold or temperate climates (minimum temperature -20°C). By utilizing external air to cool the fluid, the Free Cooling system can completely replace the refrigeration circuit, thus allowing the compressors to be turned off..





WPAmini Standard

CODE		M.U.	WPA030		WPA045		WPA050		WPA055	
Cooling capacity	W15L32	kW	105,9		136,7		168,6		192,9	
Absorbed power	W15L32	kW	24,6		34,8		40,7		58,3	
SEPR			5,59		5,29		5,52		5,62	
Cooling capacity	W7L35	kW	83		107		132		151	
Absorbed power	W7L35	kW	25		35		41		49	
Refrigerant Gas			R410A		R410A		R410A		R410A	
Refrigerant Gas charge		kg	8 + 8		11 + 11		14 + 14		16 + 16	
Cooling circuits/Compressors		N°	2 / 4		2 / 4		2 / 4		2 / 4	
Rated voltage		V~	400 , 3	460, 3	400 , 3	460, 3	400 , 3	460, 3	400 , 3	460, 3
Nominal Frequency		Hz	50	60	50	60	50	60	50	60
Height x Width x Depth		mm	2316 x 1370 x 3650		2316 x 1370 x 3650		2316 x 1370 x 3650		2316 x 1370 x 3650	
Shipping weight		kg	1190		1250		1275		1340	

WPAmini Low Noise

CODE		M.U.	WPA030		WPA045		WPA050		WPA055	
Cooling capacity	W15L32	kW	103		132,2		162,7		183,5	
Absorbed power	W15L32	kW	24,8		36		41,6		60,5	
SEPR			5,69		5,34		5,63		5,82	
Cooling capacity	W7L35	kW	80		102		126		143	
Absorbed power	W7L35	kW	25		36		43		51	
Refrigerant Gas			R410A		R410A		R410A		R410A	
Refrigerant Gas charge		kg	8 + 8		10 + 10		13 + 13		15 + 15	
Cooling circuits/Compressors		N°	2 / 4		2 / 4		2 / 4		2 / 4	
Rated voltage		V~	400 , 3	460, 3	400 , 3	460, 3	400 , 3	460, 3	400 , 3	460, 3
Nominal Frequency		Hz	50	60	50	60	50	60	50	60
Height x Width x Depth		mm	2316 x 1370 x 3650		2316 x 1370 x 3650		2316 x 1370 x 3650		2316 x 1370 x 3650	
Shipping weight		kg	1205		1265		1290		1355	

WPAmini Free Cooling

CODE		M.U.	WPA030		WPA045		WPA050		WPA055	
Cooling capacity	W15L32	kW	104		134,1		165,1		185,3	
Absorbed power	W15L32	kW	25,2		35,8		43		61,8	
SEPR			6,20		5,79		5,72		5,63	
Cooling capacity	W7L35	kW	93		118		146		166	
Absorbed power	W7L35	kW	24		33		40		48	
Refrigerant Gas			R410A		R410A		R410A		R410A	
Refrigerant Gas charge		kg	8 + 8		10 + 10		13 + 13		15 + 15	
Cooling circuits/Compressors		N°	2 / 4		2 / 4		2 / 4		2 / 4	
Rated voltage		V~	400 , 3	460, 3	400 , 3	460, 3	400 , 3	460, 3	400 , 3	460, 3
Nominal Frequency		Hz	50	60	50	60	50	60	50	60
Height x Width x Depth		mm	2316 x 1370 x 3650		2316 x 1370 x 3650		2316 x 1370 x 3650		2316 x 1370 x 3650	
Shipping weight		kg	1515		1575		1600		1665	

WPAmini Low Noise Free Cooling

CODE		M.U.	WPA030		WPA045		WPA050		WPA055	
Cooling capacity	W15L32	kW	100,2		128		155,7		170,7	
Absorbed power	W15L32	kW	25,7		37,6		44,9		66,2	
SEPR			6,19		5,80		5,61		5,32	
Cooling capacity	W7L35	kW	89		112		137		153	
Absorbed power	W7L35	kW	24		35		43		52	
Refrigerant Gas			R410A		R410A		R410A		R410A	
Refrigerant Gas charge		kg	8 + 8		10 + 10		13 + 13		15 + 15	
Cooling circuits/Compressors		N°	2 / 4		2 / 4		2 / 4		2 / 4	
Rated voltage		V~	400 , 3	460, 3	400 , 3	460, 3	400 , 3	460, 3	400 , 3	460, 3
Nominal Frequency		Hz	50	60	50	60	50	60	50	60
Height x Width x Depth		mm	2316 x 1370 x 3650		2316 x 1370 x 3650		2316 x 1370 x 3650		2316 x 1370 x 3650	
Shipping weight		kg	1530		1590		1615		1680	

(1) Evaporator water IN/OUT 12/7 °C; condensing air 35 °C. Unit at full load
(2) In accordance with ISO 3744, the contribution of pumps is not considered.

WPA Standard

CODE		M.U.	WPA060		WPA070		WPA080		WPA090	
Cooling Capacity	W15L32	kW	210,3		237,3		283,5		314,2	
Absorbed Power	W15L32	kW	51,8		63,2		71,5		81,8	
SEPR			5,58		5,37		5,21		6,05	
Cooling Capacity	W7L35	kW	174,1		199,1		222,6		245,2	
Absorbed Power	W7L35	kW	52,8		62,5		73,7		83	
Refrigerant Gas			R410A		R410A		R410A		R410A	
Refrigerant Gas charge		kg	18		17,5		17		18	
Cooling circuits/Compressors		N°	2 / 4		2 / 4		2 / 4		2 / 4	
Rated voltage		V~	400 , 3	460, 3	400 , 3	460, 3	400 , 3	460, 3	400 , 3	460, 3
Nominal Frequency		Hz	50	60	50	60	50	60	50	60
Height x Width x Depth		mm	2410x3100x2206		2410x3100x2206		2410x3100x2206		2410x3100x2206	
Shipping weight		kg	2293		2337		2395		2420	

CODE		M.U.	WPA100		WPA110		WPA120		WPA140	
Cooling Capacity	W15L32	kW	343,2		416,1		460,3		499,9	
Absorbed Power	W15L32	kW	91,5		99,6		113,9		128,2	
SEPR			6,31		6		5,70		6,04	
Cooling Capacity	W7L35	kW	266,5		318,6		353,1		385,1	
Absorbed Power	W7L35	kW	91,6		100,4		114,2		127,5	
Refrigerant Gas			R410A		R410A		R410A		R410A	
Refrigerant Gas charge		kg	15,5		22,5		25		24,5	
Cooling circuits/Compressors		N°	2 / 4		2 / 4		2 / 4		2 / 4	
Rated voltage		V~	400 , 3	460, 3	400 , 3	460, 3	400 , 3	460, 3	400 , 3	460, 3
Nominal Frequency		Hz	50	60	50	60	50	60	50	60
Height x Width x Depth		mm	2410x3100x2206		2410x4400x2206		2410x4400x2206		2410x4400x2206	
Shipping weight		kg	2440		3119		3173		3219	

CODE		M.U.	WPA160		WPA180		WPA200	
Cooling Capacity	W15L32	kW	564,9		657,2		727,4	
Absorbed Power	W15L32	kW	131,8		173,7		200,1	
SEPR			6,37		6,06		6,16	
Cooling Capacity	W7L35	kW	432		504		559,3	
Absorbed Power	W7L35	kW	131,9		173,6		199,8	
Refrigerant Gas			R410A		R410A		R410A	
Refrigerant Gas charge		kg	69		80,5		89	
Cooling circuits/Compressors		N°	2 / 4		2 / 6		2 / 6	
Rated voltage		V~	400 , 3	460, 3	400 , 3	460, 3	400 , 3	460, 3
Nominal Frequency		Hz	50	60	50	60	50	60
Height x Width x Depth		mm	2410x5770x2206		2410x5770x2206		2410x5770x2206	
Shipping weight		kg	4158		4559		4561	

WPA Free Cooling

CODE	M.U.	WPA060FC		WPA070FC		WPA080FC		WPA090FC		WPA100FC		WPA110FC	
Cooling capacity	kW	191		217,2		245,4		271,8		294,1		347,7	
FC Cooling capacity	kW	131		131		196,5		196,5		196,5		196,5	
Absorbed Power	kW	50,4		59,4		69,3		78,6		88,6		94,9	
Refrigerant Gas		R410A		R410A		R410A		R410A		R410A		R410A	
Refrigerant Gas charge	kg	18		17,5		17		18		15,5		22,5	
Cooling circuits/Compressors	N°	2 / 4		2 / 4		2 / 4		2 / 4		2 / 4		2 / 4	
Rated voltage	V~	400 , 3	460, 3	400 , 3	460, 3	400 , 3	460, 3	400 , 3	460, 3	400 , 3	460, 3	400 , 3	460, 3
Nominal Frequency	Hz	50	60	50	60	50	60	50	60	50	60	50	60
Height x Width x Depth	mm	2410x3140x2206		2410x3140x2206		2410x4400x2206		2410x4400x2206		2410x4400x2206		2410x4400x2206	
Shipping weight	kg	3054		3089		3743		3932		3953		4145	

WPA Low Noise

CODE		M.U.	WPA060SL		WPA070SL		WPA080SL		WPA090SL	
Cooling capacity	W15L32	kW	203,3		228,5		274,8		303	
Absorbed Power	W15L32	kW	54,9		67,6		75,1		86,7	
SEPR			5,22		5,17		4,88		5,58	
Cooling capacity	W7L35	kW	170,5		194		216,6		237,4	
Absorbed Power	W7L35	kW	53,4		63,8		76,8		87,1	
Refrigerant Gas			R410A		R410A		R410A		R410A	
Refrigerant Gas charge		kg	18		17,5		17		18	
Cooling circuits/Compressors		N°	2 / 4		2 / 4		2 / 4		2 / 4	
Rated voltage		V~	400 , 3	460, 3	400 , 3	460, 3	400 , 3	460, 3	400 , 3	460, 3
Nominal Frequency		Hz	50	60	50	60	50	60	50	60
Height x Width x Depth		mm	2410x3100x2206		2410x3100x2206		2410x3100x2206		2410x3100x2206	
Shipping weight		kg	2293		2323		2395		2420	

CODE		M.U.	WPA100SL		WPA110SL		WPA120SL		WPA140SL	
Cooling capacity	W15L32	kW	355,7		403,8		444,6		508,3	
Absorbed Power	W15L32	kW	89		104,1		119,8		127,7	
SEPR			5,82		5,82		5,44		5,86	
Cooling capacity	W7L35	kW	276		310,3		342,6		391,7	
Absorbed Power	W7L35	kW	88,9		104,2		119,1		126,7	
Refrigerant Gas			R410A		R410A		R410A		R410A	
Refrigerant Gas charge		kg	15,5		22,5		25		24,5	
Cooling circuits/Compressors		N°	2 / 4		2 / 4		2 / 4		2 / 4	
Rated voltage		V~	400 , 3	460, 3	400 , 3	460, 3	400 , 3	460, 3	400 , 3	460, 3
Nominal Frequency		Hz	50	60	50	60	50	60	50	60
Height x Width x Depth		mm	2410x4400x2206		2410x4400x2206		2410x4400x2206		2410x5770x2206	
Shipping weight		kg	3095		3119		3173		3855	

CODE		M.U.	WPA160SL		WPA180SL		WPA200SL	
Cooling capacity	W15L32	kW	546,5		660,6		731,7	
Absorbed Power	W15L32	kW	137,5		174,9		201	
SEPR			5,72		5,83		6,23	
Cooling capacity	W7L35	kW	419,5		507,3		563,4	
Absorbed Power	W7L35	kW	136,6		174,2		199,9	
Refrigerant Gas			R410A		R410A		R410A	
Refrigerant Gas charge		kg	69		80,5		89	
Cooling circuits/Compressors		N°	2 / 4		2 / 6		2 / 6	
Rated voltage		V~	400 , 3	460, 3	400 , 3	460, 3	400 , 3	460, 3
Nominal Frequency		Hz	50	60	50	60	50	60
Height x Width x Depth		mm	2410x5770x2206		2410x7100x2206		2410x7100x2206	
Shipping weight		kg	4256		5205		5211	

WSA & WSI ERP- Techno Range

Air Cooled - 280-1860 kW
ErP2021 - R513A (WSA) / R1234ze (WSI) - Screw Compressors

Ideal for cooling water or process fluids

WSA is a range of air-cooled liquid chillers featuring **high efficiency and low environmental impact** with free-cooling technology and cooling capacities **from 280 to 1860 kW**. Designed for 24/7, 365-day-a-year process cooling applications, the new WSA – WSI liquid chillers are characterized by one or two refrigeration circuits with stepless screw compressors (WSA) / inverters (WSI) and use plate or shell and tube evaporators with dry expansion and high heat exchange surface. The WSA/WSI range is characterized by high energy efficiency levels (Class A or B), complying with the limits required by **Directive 2009/125/EC Ecodesign ErP 202**1. Thanks to the special W-shaped configuration of the microchannel heat exchangers and their sizing, it was possible to achieve specific power levels (kW/floor area) at the top of the category.

Refrigerant Circuit

- Cooling capacity: 280 - 1860 kW
- Refrigerant: R513A (WSA); R1234ze (WSA - WSI)
- One or two redundant and independent refrigeration circuits for maximum reliability
- 1 or 2 screw compressors with stepless modulation (WSA) or integrated inverter (WSI)
- AISI 316 stainless steel brazed plate evaporator: single-circuit units
- Shell and tube evaporator with direct expansion and single pass: dual-circuit units
- Microchannel condensers entirely made of long-lasting aluminum (HA9153A) and installed with V and W geometry
- Copper-aluminum Free Cooling coils + 2 low-pressure-drop modulating two-way valves
- Electronic Expansion Valve (EEV)
- High-efficiency aerodynamic axial fans, diameter Ø 910mm, with speed control via phase cut module (optional EC brushless fans available)
- High and low pressure safety valves on the refrigerant side.

Hydraulic Circuit

- Hydraulic circuit composed of painted steel pipes coated with insulating material
- Victaulic© fittings for supply and return
- Evaporator antifreeze protection: standard differential pressure switch and antifreeze sensor
- P1 (1.5 bar) or P2 (2.5 bar) centrifugal pumps, with cast iron pump body and impeller, asynchronous or inverter motors

Electrical Panel

- Designed and built in compliance with EN 60204 standards
- Triple-door metal structure with IP44 protection rating for outdoor installation (IP54 available as an option)
- Automatic switches and contactors
- Standard phase monitor
- Clean contacts: remote ON/OFF; general alarm
- Labeled electrical cables
- SEC.blue electronic controller with 7″ color touchscreen display

LOW GWP Version for Low Environmental Impact

WSA - WSI units are available in two low environmental impact versions ensuring a reduction in global warming potential: HFO refrigerant R1234ze (GWP = 7) classified as A2L, non-toxic, slightly flammable, and zero ozone layer impact (WSA-WSI). Refrigerant R513A (GWP = 572) classified as A1, non-toxic, non-flammable, and zero ozone layer impact (WSA).

HT Version for High Temperature Water Applications (e.g. plastic)

The HT version's refrigeration circuit is specifically designed to produce chilled water with evaporator outlet temperatures from +15°C to +25°C. The compressor has an enhanced motor, allowing wide operating limits and high suction temperature.

Free Cooling for energy saving

WSA ErP chillers are available in an integrated Free Cooling version, which allows significant energy savings, especially in applications requiring high cooling fluid temperatures (plastic) and installations in cold or temperate climates.
By utilizing external air to cool the fluid, the Free Cooling system can entirely replace the refrigeration circuit, allowing the compressors to be turned off. The heat exchangers have been specifically sized to achieve a Total Free-Cooling Temperature (TFT) 10°C below the set point temperature. WSA - WSI units can be paired with FCB free cooling modules to maximize free cooling performance, further increasing the total free cooling temperature TFT.

Low Noise Version

Even in the Low Noise version, ideal for installations near residential areas, our units maintain high performance and significant energy savings, ensuring low noise levels. The compressor housing effectively reduces transmitted noise (-4dBA) thanks to a specific sound-absorbing composite material coating.

Chiller LT version for Ambient Temperatures Down to -20°C

Thanks to a sophisticated condensation control system based on partialization of the condensation surface and control of EC fan speed, the CHILLER LT version can operate in ambient temperatures as low as -20°C.



WSA - R513A

CODE		090	110	140	160	180	200	220	250	280	300	320	360	380	420	480	560	640	700
Cooling capacity (1)	kW	192	243	289	358	397	442	501	542	635	691	764	834	952	983	1113	1165	1287	1451
Total power input (1)	kW	69	82	109	121	140	141	166	180	211	231	236	279	299	326	368	407	443	480
EER (1)		2,77	2,96	2,66	2,97	2,84	3,13	3,02	3,01	3,00	3,00	3,23	2,99	3,18	3,01	3,02	2,87	2,91	3,03
Cooling capacity (2)	kW	281	360	428	529	578	655	753	781	944	n.a.	1094	1220	n.a.	1413	1617	1686	n.a.	n.a
Total power input (2)	kW	84	97	130	143	170	169	197	229	250	n.a.	285	335	n.a.	380	431	503	n.a.	n.a.
EER (2)		3,35	3,71	3,29	3,70	3,40	3,88	3,82	3,41	3,78	n.a.	3,84	3,64	n.a.	3,72	3,75	3,35	n.a.	n.a.
SEPR HT (3)		5,60	5,30	5,26	5,61	5,51	5,51	5,43	5,58	5,68	5,54	5,67	5,46	5,41	5,57	5,54	5,88	5,76	5,90

Technical data																			
Refrigerant gas	R513A																		
No. of compressors/circuits	1/1			2/2															
No. of axial fans	3	4	4	6	6	8	8	8	10	10	12	12	14	14	16	16	18	20	
Sound power [dB(A)] (4)	88,3	93,6	92,8	91,3	91,2	95,2	96,6	95,4	95,9	97,8	96,8	97	98,9	97,9	98,7	99,5	100,1	102	

Dimensions and weights																			
Hydraulic connection diameter	3"	3"	4"	4"	4"	5"	5"	5"	5"	6''	6''	6''	6''	6''	8''	8''	8''	8''	
Width	1140	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	
Depth	4330	3205	3205	4330	4330	5875	5875	5875	6955	6955	8080	8080	9582	9582	10707	10707	11830	13330	
Height	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	
Empty weight BASIC version [kg] (5)	3290	3970	4140	5270	5410	7200	7230	7220	8390	8430	9240	10100	10900	11380	12120	12930	13560	14390	

(1) Data refer to nominal condition (UNI EN 14511:2018): water temperature inlet/outlet 12/7°C, ambient air temperature +35°C.
(2) Data refer to HT high water temperature conditions for IT applications: water temperature inlet/outlet 30/20°C, ambient air temperature +35°C
(3) Data declared in accordance with European Regulation (EU) 2016/2281 for high temperature process chillers
(4) Sound power level measured according to EN ISO 9614. Data of basic unit without options, full load and referred to the following conditions: evaporator fluid: 100% water, IN/OUT temp. = +12/+7 °C, ambient temp. = +35°C.
(5) Unit in standard configuration/execution, without optional accessories

WSF - FREE COOLING - R513A

CODE		090	110	140	160	180	200	220	250	280	300	320	360	380	420	480	560	640	700
Cooling capacity (1)	kW	190	239	286	358	399	446	508	548	642	694	761	835	955	992	1118	1164	1288	1450
Total power input (1)	kW	70	84	109	123	145	146	171	185	217	237	242	284	307	334	376	413	450	487
EER (1)		2,70	2,84	2,61	2,91	2,76	3,05	2,97	2,97	2,95	2,93	3,14	2,94	3,11	2,97	2,97	2,82	2,86	2,98
Cooling capacity (2)	kW	286	364	432	530	585	657	744	790	965	n.a.	1102	1209	n.a.	1441	1649	1706	n.a.	n.a
Total power input (2)	kW	85	99	130	145	172	172	199	231	252	n.a.	289	339	n.a.	386	435	506	n.a.	n.a.
Temp. 100 % Free Cooling (2) [°C]	°C	10,2	11,0	8,8	11,1	10,0	12,1	11,3	10,0	11,0	n.a.	11,7	10,8	n.a.	10,1	10,3	9,9	n.a.	n.a.
EER (2)		3,36	3,68	3,32	3,66	3,40	3,82	3,74	3,42	3,83	n.a.	3,81	3,57	n.a.	3,73	3,79	3,37	n.a.	n.a.
SEPR HT (3)		6,14	5,61	5,86	6,41	6,24	6,16	6,18	6,21	6,39	6,31	6,36	6,02	6,37	6,21	6,19	6,44	6,40	6,47

Technical data																			
Refrigerant gas	R513A																		
No. of compressors/circuits	1/1			2/2															
No. of axial fans	3	4	4	6	6	8	8	8	10	10	12	12	12	12	12	16	18	20	
Sound power [dB(A)] (4)	88,6	93,7	93	91,7	91,6	95,4	96,8	95,6	96,1	97,9	97	97,2	99,1	98,1	98,9	99,7	100,3	102,2	

Dimensions and weights																			
Hydraulic connection diameter	3"	3"	4"	4"	4"	5"	5"	5"	5"	6"	6"	6"	6"	6"	8"	8"	8"	8"	
Width	1140	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	
Depth	4330	3205	3205	4330	4330	5875	5875	5875	6955	8080	8080	9582	9582	9582	10707	10707	11830	13330	
Height	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	
Empty weight BASIC version [kg] (5)	3390	4110	4270	5450	5590	7450	7480	7480	8640	8680	9590	10440	11270	11740	13010	13820	14580	15560	

(1) Data refer to nominal condition (UNI EN 14511:2018): water temperature inlet/outlet 12/7°C, ambient air temperature +35°C.
(2) Data refer to HT high water temperature conditions for IT applications: water temperature inlet/outlet 30/20°C, ambient air temperature +35°C
(3) Data declared in accordance with European Regulation (EU) 2016/2281 for high temperature process chillers
(4) Sound power level measured according to EN ISO 9614. Data of basic unit without options, full load and referred to the following conditions: evaporator fluid: 100% water, IN/OUT temp. = +12/+7 °C, ambient temp. = +35°C.
(5) Unit in standard configuration/execution, without optional accessories

WSA - R1234ze

CODE		090	110	140	160	180	220	250	280	300	320	360	380	420	480	560	640	700
Cooling capacity (1)	kW	178	196	227	257	329	370	433	471	525	571	670	726	772	872	891	985	1119
Total power input (1)	kW	60	68	76	87	104	122	130	153	165	172	199	210	232	266	293	317	334
EER (1)		2,97	2,90	3,00	2,94	3,16	3,04	3,32	3,08	3,19	3,32	3,36	3,45	3,33	3,27	3,04	3,11	3,35
Cooling capacity (2)	kW	281	312	358	406	507	568	661	715	n.a.	868	1009	n.a.	1160	1302	1342	1472	n.a.
Total power input (2)	kW	73	84	92	104	125	148	156	185	n.a.	195	229	n.a.	272	315	346	373	n.a.
EER (2)		3,85	3,71	3,89	3,90	4,06	3,84	4,24	3,86	n.a.	4,45	4,41	n.a.	4,26	4,13	3,88	3,95	n.a.
SEPR HT (3)		5,10	5,26	5,43	5,06	5,46	5,19	5,52	5,57	5,51	5,55	5,53	5,56	5,51	5,52	5,61	5,51	5,54

Technical data																		
Refrigerant gas	R1234ze																	
No. of compressors/circuits	1/1				2/2													
No. of axial fans	3	3	4	4	6	6	8	8	8	10	12	12	12	12	14	16	18	
Sound power [dB(A)] (4)	93,5	92,3	92,8	93,7	95,1	96,6	95,4	95,8	97,7	96,8	97	98,9	97,9	98,7	99,5	100,1	102	

Dimensions and weights																	
Hydraulic connection diameter	3"	3"	3"	4"	4"	4"	5"	5"	5"	5"	6"	6"	6"	6"	6"	8"	8"
Width	1140	1140	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280
Depth	4330	4330	3205	3205	4330	4330	5875	5875	5875	6955	8080	8080	8080	8080	9582	10707	11830
Height	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485
Empty weight BASIC version [kg] (5)	3670	3690	4110	4130	5950	6110	7200	7300	7360	8420	10020	10070	10090	10230	11390	12010	13560

(1) Data refer to nominal condition (UNI EN 14511:2018): water temperature inlet/outlet 12/7°C, ambient air temperature +35°C.
(2) Data refer to HT high water temperature conditions for IT applications: water temperature inlet/outlet 30/20°C, ambient air temperature +35°C
(3) Data declared in accordance with European Regulation (EU) 2016/2281 for high temperature process chillers
(4) Sound power level measured according to EN ISO 9614. Data of basic unit without options, full load and referred to the following conditions: evaporator fluid: 100% water, IN/OUT temp. = +12/+7 °C, ambient temp. = +35°C.
(5) Unit in standard configuration/execution, without optional accessories

WSF - FREE COOLING - R1234ze

CODE		090	110	140	160	180	220	250	280	300	320	360	380	420	480	560	640	700
Cooling capacity (1)	kW	182	198	229	261	333	375	435	477	530	574	675	732	778	881	898	995	1128
Total power input (1)	kW	62	69	78	90	108	125	136	158	169	179	207	218	239	273	301	326	345
EER (1)		2,94	2,87	2,94	2,92	3,09	2,99	3,19	3,02	3,14	3,20	3,26	3,36	3,26	3,23	2,98	3,05	3,27
Cooling capacity (2)	kW	287	315	363	410	507	576	678	713	n.a.	880	1017	n.a.	1170	1305	1361	1507	n.a.
Total power input (2)	kW	75	84	94	105	127	149	161	189	n.a.	200	238	n.a.	276	317	352	380	n.a.
Temp. 100 % Free Cooling (2) [°C]		10,5	9,1	11,1	9,8	11,8	10,4	12,0	11,2	n.a.	12,5	12,9	n.a.	10,6	7,9	11,1	11,7	n.a.
EER (2)		3,83	3,75	3,86	3,90	3,99	3,87	4,21	3,77	n.a.	4,40	4,27	n.a.	4,24	4,12	3,87	3,97	n.a.
SEPR HT (3)		5,83	5,80	6,27	5,88	6,30	5,96	6,21	6,37	6,88	6,13	6,34	6,42	6,36	6,36	6,42	6,35	6,52

Technical data																		
Refrigerant gas	R1234ze																	
No. of compressors/circuits	1/1				2/2													
No. of axial fans	3	3	4	4	6	6	8	8	8	10	12	12	12	12	14	16	18	
Sound power [dB(A)] (4)	93,7	92,4	93	93,9	95,3	96,7	95,6	96	97,8	97	97,2	99	98,1	98,8	99,6	100,2	102,1	

Dimensions and weights																	
Hydraulic connection diameter	3"	3"	3"	4"	4"	4"	5"	5"	5"	5"	6"	6"	6"	6"	6"	8"	8"
Width	1140	1140	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280
Depth	4330	4330	3025	3025	4330	4330	5875	5875	5875	6955	8080	8080	8080	8080	9582	10707	11830
Height	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485
Empty weight BASIC version [kg] (5)	3770	3790	4240	4260	6130	6290	7460	7550	7610	8700	10370	10410	10450	10600	11760	12890	14580

(1) Data refer to nominal condition (UNI EN 14511:2018): water temperature inlet/outlet 12/7°C, ambient air temperature +35°C.
(2) Data refer to HT high water temperature conditions for IT applications: water temperature inlet/outlet 30/20°C, ambient air temperature +35°C
(3) Data declared in accordance with European Regulation (EU) 2016/2281 for high temperature process chillers
(4) Sound power level measured according to EN ISO 9614. Data of basic unit without options, full load and referred to the following conditions: evaporator fluid: 100% water, IN/OUT temp. = +12/+7 °C, ambient temp. = +35°C.
(5) Unit in standard configuration/execution, without optional accessories

WSI - R1234ze

CODE		110	160	180	220	280	300	320	360	420	480	560	640	700
Cooling capacity (1)	kW	215	268	352	448	509	565	639	704	853	942	1094	1205	1265
Total power input (1)	kW	69	87	112	140	155	177	195	223	264	301	359	380	379
EER (1)		3,11	3,07	3,15	3,19	3,29	3,19	3,27	3,15	3,23	3,14	3,05	3,17	3,34
Cooling capacity (2)	kW	337	426	549	684	766	865	945	1086	1290	1416	1672	1766	1862
Total power input (2)	kW	84	105	134	169	171	212	214	266	318	363	438	448	443
EER (2)		4,01	4,06	4,10	4,05	4,48	4,08	4,42	4,08	4,06	3,90	3,82	3,94	4,20
SEPR HT (3)		6,03	5,76	5,90	6,20	6,28	6,09	6,06	6,04	6,11	6,19	6,26	6,15	6,04

Technical data														
Refrigerant gas	R1234ze													
No. of compressors/circuits	1/1			2/2										
No. of axial fans	3	4	6	6	8	8	10	12	12	14	16	16	18	
Sound power [dB(A)] (4)	95,9	96,3	98,2	98,9	100,9	99,3	101,3	101,2	99,6	99,6	101,2	103,1	103,1	

Dimensions and weights													
Hydraulic connection diameter	3"	4"	4"	5"	5"	5"	6''	6''	6''	6''	8"	8"	8"
Width	1140	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280
Depth	4330	3205	4330	4330	4330	4330	6955	8080	8080	9582	10707	10707	11830
Height	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485
Empty weight BASIC version [kg] (5)	3630	3980	4800	5760	7060	7000	7930	8630	9740	10490	11760	12450	13120

(1) Data refer to nominal condition (UNI EN 14511:2018): water temperature inlet/outlet 12/7°C, ambient air temperature +35°C.
(2) Data refer to HT high water temperature conditions for IT applications: water temperature inlet/outlet 30/20°C, ambient air temperature +35°C
(3) Data declared in accordance with European Regulation (EU) 2016/2281 for high temperature process chillers
(4) Sound power level measured according to EN ISO 9614. Data of basic unit without options, full load and referred to the following conditions: evaporator fluid: 100% water, IN/OUT temp. = +12/+7 °C, ambient temp. = +35°C.
(5) Unit in standard configuration/execution, without optional accessories

WSJ - FREE COOLING - R1234ze

CODE		110	160	180	220	280	300	320	360	420	480	560	640	700
Cooling capacity (1)	kW	212	265	348	442	504	558	633	697	843	931	1081	1191	1250
Total power input (1)	kW	71	90	115	145	160	183	200,9	229,9	271,5	309,5	368,3	389,4	388,8
EER (1)		2,97	2,95	3,03	3,05	3,16	3,06	3,15	3,03	3,10	3,01	2,94	3,06	3,22
Cooling capacity (2)	kW	332	419	542	672	758	851	935	1071	1269	1394	1645	1740	1837
Total power input (2)	kW	87	109	138	175	177	220	222	275	329	375	451	477	457
Temp. 100 % Free Cooling (2) [°C]		8,10	8,80	10,30	8,60	10,20	9,40	10,40	10,90	9,30	9,50	9,20	8,50	9,20
EER (2)		3,82	3,84	3,93	3,84	4,28	3,87	4,21	3,89	3,86	3,72	3,65	3,65	4,02
SEPR HT (3)		6,78	6,66	6,41	6,90	6,94	6,71	6,60	6,52	6,77	6,70	6,97	6,64	6,74

Technical data													
Refrigerant gas	R1234ze												
No. of compressors/circuits	1/1			2/2									
No. of axial fans	3	4	6	6	8	8	10	12	12	14	16	16	18
Sound power [dB(A)] (4)	95,9	96,3	98,2	98,9	100,9	99,3	101,3	101,2	99,6	99,6	101,2	103,1	103,1

Dimensions and weights													
Hydraulic connection diameter	3"	4"	4"	5"	5"	5"	6''	6''	6''	6''	8"	8"	8"
Width	1140	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280
Depth	4330	3205	4330	4330	4330	4330	6955	8080	8080	9582	10707	10707	11830
Height	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485
Empty weight BASIC version [kg] (5)	3730	4110	4980	6050	7410	7350	8300	9080	10230	11130	12570	13300	13960

(1) Data refer to nominal condition (UNI EN 14511:2018): water temperature inlet/outlet 12/7°C, ambient air temperature +35°C.
(2) Data refer to HT high water temperature conditions for IT applications: water temperature inlet/outlet 30/20°C, ambient air temperature +35°C
(3) Data declared in accordance with European Regulation (EU) 2016/2281 for high temperature process chillers
(4) Sound power level measured according to EN ISO 9614. Data of basic unit without options, full load and referred to the following conditions: evaporator fluid: 100% water, IN/OUT temp. = +12/+7 °C, ambient temp. = +35°C.
(5) Unit in standard configuration/execution, without optional accessories

WSW - Techno Range

Water cooled - 236-1529 kW
ErP - R513A - Screw Compressors

Ideal for cooling water or process fluids
Liquid chillers designed for 24/7, 365 days a year process cooling applications, water-cooled with one or two refrigerant circuits and screw compressors optimized for the use of the eco-friendly refrigerant R513A. They feature dry expansion evaporators and shell and tube condensers with cooling capacities ranging from 236 kW to 1,529 kW. Cosmotec's experience in process cooling has led to the development of this range of industrial chillers capable of meeting the broad operating limits (both environmental and user side) required by new energy-saving technologies. All WSW chillers feature high levels of energy efficiency (Class A or B) and comply with the limits required by Directive 2009/125/EC Ecodesign ErP 2021.

Refrigeration Circuit
- Cooling capacity: 236 - 1,529 kW
- Refrigerant: R513A; R134a
- One or two redundant and independent refrigeration circuits for maximum reliability
- 1 or 2 screw compressors with stepless unloading slide valve
- Direct expansion shell and tube evaporators and condensers
- High and low pressure safety valves on the refrigerant side

Electrical Panel
- Design and construction in compliance with EN 60204 standards
- Triple-door metal structure, with IP44 protection rating for outdoor installation (IP54 available as an option)
- Circuit breakers and contactors
- Standard phase monitor
- Clean contacts: remote ON/OFF; general alarm
- Labeled electrical cables
- SEC.blue electronic controller with 7" color touch-screen display

LOW GWP version for low environmental impact
The WSW units are available in a low environmental impact version, which ensures a reduction in global warming potential with R513A refrigerant (GWP = 572) classified as A1 non-toxic, non-flammable, and with zero impact on the ozone layer.

Free Cooling with the integration of the WFM module
Thanks to the integration of the main hydronic components (plate water/water heat exchanger, servo-operated valves, and one or more inverter-controlled pumps), the WFM module allows transforming a system consisting of a WSW chiller and a dry cooler into a free cooling system capable of saving energy. These Free Cooling systems offer significant energy savings, especially in applications requiring high cooling fluid temperatures (plastics) and installations in areas with cold or temperate climates.
The WFM module's control software monitors both external and operating temperatures and adjusts the cooling capacity of the remote dry cooler. This ensures optimal control of the WSW unit's condensation temperature and maximum Free Cooling efficiency during mid-seasons, with low operating costs and minimal environmental impact.

HT version for high-temperature water applications (e.g., plastics)
The HT version's refrigeration circuit is specially designed (upon request) to produce chilled water with evaporator outlet temperatures from +15°C to +25°C. The compressor has an enhanced motor, allowing for broad operating limits and high suction temperature.

Low Noise version
Even in the Low Noise version, ideal for installations near residential areas, our units maintain high performance and significant energy savings while ensuring low noise levels. The compressor casing effectively reduces transmitted noise (-4dBA) thanks to a specific composite sound-absorbing material lining.



WSW Standard

CODE	M.U.	WSW080		WSW090		WSW110		WSW125	
Cooling capacity	kW	230		286		310		352	
Absorbed Power	kW	45		55		60		69	
SEPR		8,1		8,22		7,92		8,02	
Refrigerant Gas		R134a		R134a		R134a		R134a	
Refrigerant Gas charge	kg	61		76		82		93	
Cooling circuits/Compressors	N°	1 / 1		1 / 1		1 / 1		1 / 1	
Rated voltage	V~	400 , 3	460 , 3	400 , 3	460 , 3	400 , 3	460 , 3	400 , 3	460 , 3
Nominal Frequency	Hz	50	60	50	60	50	60	50	60
Height x Width x Depth	mm	1880x1340x3010		1880x1340x3310		1880x1460x3306		1905x1340x3790	
Shipping weight	kg	2625		2992		3029		3166	

CODE	M.U.	WSW140		WSW160		WSW180		WSW220	
Cooling capacity	kW	429		459		570		626	
Absorbed Power	kW	83		90		110		120	
SEPR		8,01		8,31		8,55		8,16	
Refrigerant Gas		R134a		R134a		R134a		R134a	
Refrigerant Gas charge	kg	113		15 + 15		75 + 75		81 + 81	
Cooling circuits/Compressors	N°	1 / 1		2 / 2		2 / 2		2 / 2	
Rated voltage	V~	400 , 3	460 , 3	400 , 3	460 , 3	400 , 3	460 , 3	400 , 3	460 , 3
Nominal Frequency	Hz	50	60	50	60	50	60	50	60
Height x Width x Depth	mm	1905x1340x3790		1970x1871x4416		1970x1871x4916		2100x1871x4558	
Shipping weight	kg	3640		3818		4420		4735	

CODE	M.U.	WSW250		WSW265		WSW280		WSW320	
Cooling capacity	kW	704,3		780		856		974	
Absorbed Power	kW	139		154		167		189	
SEPR		8,24		8,01		8		8,11	
Refrigerant Gas		R134a		R134a		R134a		R134a	
Refrigerant Gas charge	kg	92 + 92		103 + 103		113 + 113		128 + 128	
Cooling circuits/Compressors	N°	2 / 2		2 / 2		2 / 2		2 / 2	
Rated voltage	V~	400 , 3	460 , 3	400 , 3	460 , 3	400 , 3	460 , 3	400 , 3	460 , 3
Nominal Frequency	Hz	50	60	50	60	50	60	50	60
Height x Width x Depth	mm	1970x1871x4916		1986x1871x5084		1986x1871x4745		1993x1931x4856	
Shipping weight	kg	5069		5555		6073		6487	

CODE	M.U.	WSW360		WSW420		WSW480		WSW560	
Cooling capacity	kW	1104		1261		1376		1529	
Absorbed Power	kW	213		240		212		300	
SEPR		8,32		8,24		8,14		8,51	
Refrigerant Gas		R134a		R134a		R134a		R134a	
Refrigerant Gas charge	kg	145 + 145		160 + 160		180 + 180		200 + 200	
Cooling circuits/Compressors	N°	2 /2		2 / 2		2 / 2		2 / 2	
Rated voltage	V~	400 , 3	460 , 3	400 , 3	460 , 3	400 , 3	460 , 3	400 , 3	460 , 3
Nominal Frequency	Hz	50	60	50	60	50	60	50	60
Height x Width x Depth	mm	2026x1891x5278		2129x1951x4583		2165x1936x5096		2165x1931x5390	
Shipping weight	kg	6736		7194		7576		7800	

WSW Low Noise

CODE	M.U.	WSW080SL		WSW090SL		WSW110SL		WSW125SL	
Cooling capacity	kW	228,7		283,9		308,3		350,8	
Absorbed Power	kW	45,4		55,4		60,4		69,5	
SEPR		8,1		8,22		7,92		8,02	
Refrigerant Gas		R134a		R134a		R134a		R134a	
Refrigerant Gas charge	kg	61		76		82		93	
Cooling circuits/Compressors	N°	1 / 1		1 / 1		1 / 1		1 / 1	
Rated voltage	V~	400 , 3	460 , 3	400 , 3	460 , 3	400 , 3	460 , 3	400 , 3	460 , 3
Nominal Frequency	Hz	50	60	50	60	50	60	50	60
Height x Width x Depth	mm	1880x1340x3010		1880x1340x3010		1880x1460x3306		1905x1340x3790	
Shipping weight	kg	2650		3017		3054		3190	

CODE	M.U.	WSW140SL		WSW160SL		WSW180SL		WSW220SL	
Cooling capacity	kW	426,4		457,1		566,1		612,6	
Absorbed Power	kW	83,6		90,7		110,7		120,8	
SEPR		7,93		8,31		8,55		8,16	
Refrigerant Gas		R134a		R134a		R134a		R134a	
Refrigerant Gas charge	kg	113		15 + 15		75 + 75		81 + 81	
Cooling circuits/Compressors	N°	1 / 1		2 / 2		2 / 2		2 / 2	
Rated voltage	V~	400 , 3	460 , 3	400 , 3	460 , 3	400 , 3	460 , 3	400 , 3	460 , 3
Nominal Frequency	Hz	50	60	50	60	50	60	50	60
Height x Width x Depth	mm	1905x1340x3790		1970x1871x4416		1970x1871x4916		2100x1871x4558	
Shipping weight	kg	3665		3868		4470		4785	

CODE	M.U.	WSW250SL		WSW265SL		WSW280SL		WSW320SL	
Cooling capacity	kW	701,3		777,2		852,7		969,7	
Absorbed Power	kW	139,1		154,1		167,2		189,1	
SEPR		8,24		7,99		8		8,11	
Refrigerant Gas		R134a		R134a		R134a		R134a	
Refrigerant Gas charge	kg	92 + 92		103 + 103		113 + 113		128 + 128	
Cooling circuits/Compressors	N°	2 / 2		2 / 2		2 / 2		2 / 2	
Rated voltage	V~	400 , 3	460 , 3	400 , 3	460 , 3	400 , 3	460 , 3	400 , 3	460 , 3
Nominal Frequency	Hz	50	60	50	60	50	60	50	60
Height x Width x Depth	mm	1970x1871x4916		1986x1871x5084		2060x1871x4745		2050x1931x4856	
Shipping weight	kg	5119		5605		6123		6537	

CODE	M.U.	WSW360SL		WSW420SL		WSW480SL		WSW560SL	
Cooling capacity	kW	1099,1		1254,5		1371		1523,8	
Absorbed Power	kW	213,2		240,7		272,1		300,1	
SEPR		8,32		8,24		8,14		8,19	
Refrigerant Gas		R134a		R134a		R134a		R134a	
Refrigerant Gas charge	kg	145 + 145		160 + 160		180 + 180		200 + 200	
Cooling circuits/Compressors	N°	2 / 2		2 / 2		2 / 2		2 / 2	
Rated voltage	V~	400 , 3	460 , 3	400 , 3	460 , 3	400 , 3	460 , 3	400 , 3	460 , 3
Nominal Frequency	Hz	50	60	50	60	50	60	50	60
Height x Width x Depth	mm	2100x1891x5278		2202x1951x4583		2232x1936x5096		2232x1931x5390	
Shipping weight	kg	6786		7244		7626		7850	

Correction factors

Correction Factors To Calculate The Cooling Capacity At Different Working Conditions WLA/										
Temperature	°C	15	20	25	27	30	32	35	40	45
F1 correction factor		1,15	1,12	1,07	1,05	1,02	1	0,96	0,89	0,81
Water leaving temperature	°C	8	10	15	20	25				
F2 correction factor		0,89	0,93	1	1,05	1,15				
Glycol	%	0	10	20	30	40				
F3 correction factor		1	0,99	0,98	0,97	0,96				

To calculate the cooling capacity at different conditions multiply the nominal cooling capacity P at condition (1) by the correction factors: PxF1xF2xF3
The cooling capacity calculated with the correction factors is estimated
Working limits: reference to the technical features

Protection Degree

IP Classification

1 digit	Protection from solid foreign objects
0	No protection
1	Protection against the penetration of solid foreign objects with a diameter ≥50 mm
2	Protection against the penetration of solid foreign objects with a diameter ≥12,5 mm
3	Protection against the penetration of solid foreign objects with a diameter ≥2,5 mm
4	Protection against the penetration of solid foreign objects with a diameter ≥1 mm
5	Dust protection
6	Dust-tight

2 digit	Protection against water ingress
0	No protection
1	Protection against dripping water
2	Protection against dripping water when tilted up to 15°
3	Protection against spraying water
4	Protection against splashing of water
5	Protection against water jets
6	Protection against powerful water jets

NEMA ratings

TYPE	
4	For indoor or outdoor use, protected against windblown dust, rain, splashing water and sprayed water; also protected against external formation of ice on the enclosure
4x	Enclosures constructed for indoor or outdoor use protected against windblown dust and rain, splashing water, sprayed water and corrosion; also protected against external formation of ice on the enclosure
12	Enclosures constructed for indoor use protected against falling dirt, circulating dust and dripping, non-corrosive liquids

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your cooling solutions

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