Carrier

AQUAFORCE™

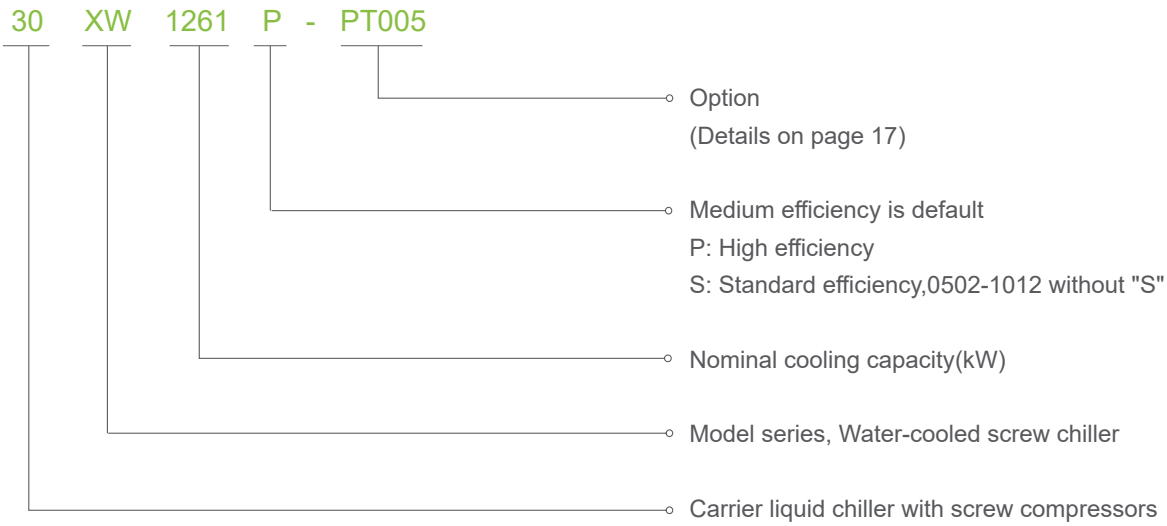
30XW
Water-Cooled Liquid Chiller

Cooling capacity: 250~3467kW

In 1998, Time magazine named Dr. Carrier one of its 20 most influential builders and titans of the 20thcentury.

Carrier is a leading global provider of innovative HVAC, refrigeration, fire, security and building automation technologies. Supported by the iconic Carrier name, the company's portfolio includes industry-leading brands such as Carrier, Kidde, Edwards, LenelS2 and Automated Logic. Carrier's businesses enable modern life, delivering efficiency, safety, security, comfort, productivity and sustainability across a wide range of residential, commercial and industrial applications.

Nomenclature



Operating Range

Cooling/Heating		
Evaporator	Minimum	Maximum
Entering temperature at start-up	-	35℃
Leaving temperature during operation	3.3℃*	20℃
Entering/leaving temperature difference at full load	2.8℃	11.1℃
Condenser	Minimum	Maximum
Entering temperature at start-up	13℃	-
Leaving temperature during operation	19℃**	50℃***
Entering/leaving temperature difference at full load	2.8℃	11.1℃

*If the leaving water temperature is below 3.3℃, a frost protection solution must be used.
Please refer to option 05 and option 06 for application with low evaporator leaving water temperature (>-12℃).
**If the temperature leaving the condenser is below 19℃, a water flow control valve must be used at the condenser (two or three-way valve). Please refer to option 152 to ensure the correct condensing temperature.
***Please refer to option 150 for applications with high condenser leaving temperature (up to 63℃). Refer to 30XW-S and 30XW0262/0312/0352/1012 standard chiller with condenser leaving temperature 48℃. 30XW/-P/-S 1261-1601 with condenser leaving temperature 45℃.
Note:
Ambient temperature: During storage and transport of the 30XW units the minimum and maximum permissible temperatures are -20℃ and 60℃. These temperatures should be taken into consideration for transport by container.

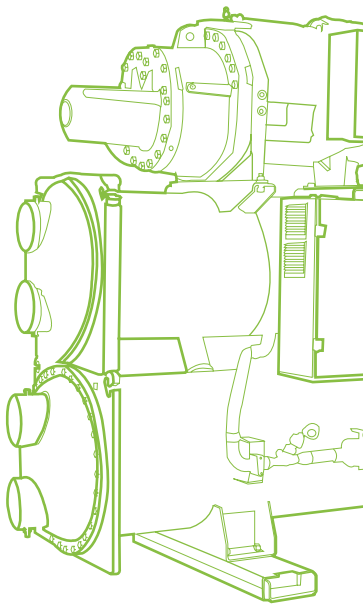
Cooling Capacity

250~3467kW

All data over 200Tons in this catalogue is rated in accordance with AHRI Standard 550/590 and 551/591 as represented in the Packaged Chiller Builder Selection Program (E-Cat)

Features

- The Aquaforce liquid chillers are the premium solution for industrial and commercial applications where installers, consultants and building owners require optimal performances and maximum quality.
- The Aquaforce liquid chillers are designed to meet current and future compactness. They use the most reliable technologies available today:
  - Twin-rotor screw compressors with a variable capacity valve.
  - Single refrigerant R134a.
  - Carrier® SmartVu™ Control system.
  - Flooded heat exchangers that are mechanically cleanable.
- To meet to all environmental and economic requirements,the 30XW is available in three efficiency classes:
  - Standard efficiency 30XW-S units that offerings excellent quality with superior cost advantage, designed to maximize savings, it's the cost-effective choice, suitable for comfort cooling of hotels, office and industrial settings.
  - Medium-efficiency 30XW units that offer an optinized balance of technical and economical aspects, while at the same time boasting superior energy efficiency.
  - High-efficiency 30XW-P units that offer unequalled energy efficiency to satisfy the most stringent demands of building owners wanting to reduce operating costs to the minimum.
- The 30XW Aquaforce range is also split into two versions:
  - 30XW for air conditioning and refrigeration applications.
  - 30XW Heating for heating applications.
- These two versions provide the following performances:
  - High heating temperature, allowing the 30XW Heating Aquaforce to supply water with a condenser leaving water temperature of +63°C (option 150A)
  - Low temperature, allowing the 30XW Aquaforce to operate with an evaporator leaving glycol temperature down to -6°C (option 5) or -12°C (option 6).



Premium full load and part load performance

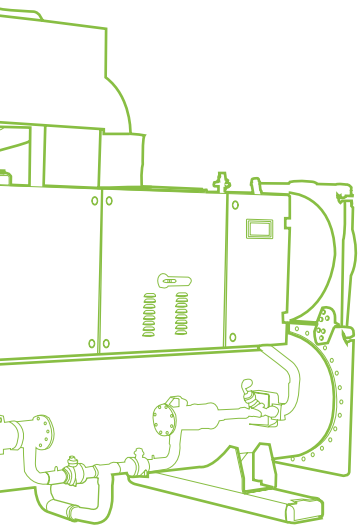
- New twin-rotor screw compressor specifically designed for HFC-134a equipped with a high-efficiency motor and a variable capacity valve that permits exact matching of the cooling capacity to the load.
- Flooded multi-pipe evaporator and condenser for increased heat exchange efficiency. The evaporator has a low pressure drop-which results in reduced cost of water pump.
- Electronic expansion device permitting operation at a lower condensing pressure and improved utilization of the evaporator heat exchange surface (superheat control).
- Economizer system with electronic expansion device for increased cooling capacity (30XW-P).

Absolute reliability

- Screw compressors
  - Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
  - Patented line-design screw rotors and microprocessor-based control to guarantee accurate meshing and enhance service life.
  - Reduced number of moving parts, with compressor rotors directly driven by the motor, to lower the gailure rate and enhance reliability.
  - All compressor components are easily accessible on site minimizing down-time.
  - Protection increased by an electronic board.
- Evaporator
  - Electronic paddle-free flow switch. Auto-setting according to cooler size and fluid type.
- Auto-adaptive control.
  - Control algorithm prevents excessive compressor cycling (Carrier patent).
  - Automatic compressor unloading in case of abnormally high condensing pressure.
  - Control system has comprehensive protection during operation, such as oil temperature control, overvoltage and overcurrent protection, discharge temperature overheat protection, heat exchanger anti-freeze protection etc. in order to ensure chiller long time reliable operation.
- Exceptional endurance tests
  - Partnerships with specialized laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
  - Transport simulation test in the laboratory on a vibrating table and then on an endurance circuit.

Environmental care

- R134a refrigerant
  - Refrigerant of the HFC group with zero ozone depletion potential.
- Leak-tight refrigerant circuit
  - Reduction of leaks as no capillary tubes and are connections are used.
  - Verication of pressure transducers and temperature sensors without trans ferring refrigerant charge.
  - Discharge line shut-off valve and liquid line service valve for simplied maintenance.



Easy and fast installation

- Compact design
  - The 30XW units are designed to offer the most compact dimensions on the market.
  - With a width of approximately 1 m up to 1500 kW the units can pass through standard door openings and only require minimum oor space in the plant room.
- Simplied electrical connections
  - Main disconnect switch with high trip capacity.
  - Transformer to supply the integrated control circuit (400/24 V).
- Simplied hydronic connections
  - Victaulic connections on the evaporator and condenser.
  - Practical reference marks for entering and leaving water connections.
  - Possibility to reverse the heat exchanger water inlet and outlet at the factory.
- Fast commissioning
  - Systematic factory operation test before shipment.
  - Quick-test function for step-by-step verication of the instruments, expansion devices and compressors.

Smart Control

- New innovative Carrier® SmartVu™ control system combines intelligence with operating simplicity which providing more comfortable operation experience. The control constantly monitors all machine parameters and precisely manages the operation of compressors, electronic expansion devices and of the evaporator water pump for optimum energy efficiency.
- Ease-of-use
  - An intuitive and user-friendly interface, the concise and clear information is available in local languages.
  - Complete menu which can customized for different users (end user, service personnel or Carrier engineers).
  - Graphically dynamic display of the operation parameters in real time.
  - Up to 10 languages for choice.
  - The DCT (Data Collection Tool) records the alarms history and automatically pushed alarm mail to simplify and facilitate service operations.
- Energy management
  - Internal time schedule clock: controls chiller on/off times and operation at a second set-point.
  - Set-point reset based on the return water temperature.
  - Carrier Smart Service (optional) provides value added customer service which enhanced data management and analysis will help achieve continuous optimization of the chiller and system operation.

Carrier® SmartVu™ Control System - Intelligent Colored Touch Screen

- 30XW chiller employs Carrier's most advanced Carrier® SmartVu™ controller that delivers distinct capabilities of controlling and monitoring the chiller operations.
- Equipped with high-resolution colorful touch screen, Carrier® SmartVu™ controller offers more user-friendly interface with intuitive graphical operational data in real time, adapts precisely the chiller capacity to building load and provides comprehensive protection.

Reliable Start - up and Operation

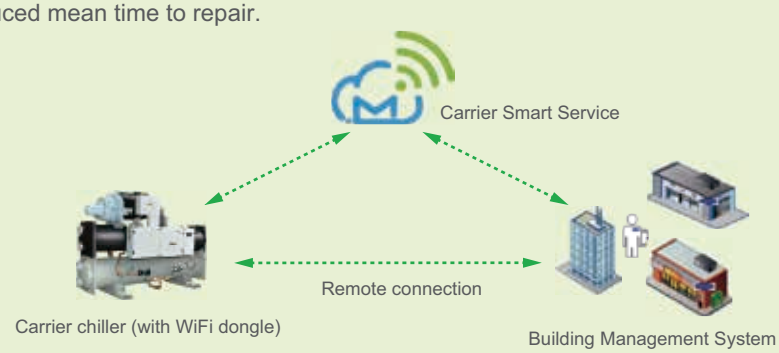
- Carrier® SmartVu™ controller offers password protection to avoid any unauthorized operation.
- When chiller starts, the controller will activate pre-start process to check parameters such as pressure, temperature, motor status, water flow etc.
- In addition to the function of monitoring the main operational parameters, trending function provide the visual dynamic parameter curves. The intelligent and dynamic algorithm ensures optimal, effective and reliable chiller operation.
- The control system provides following comprehensive protection, which guarantees steady chiller operation:
  - Overcurrent.
  - Discharge temperature overheat.
  - Motor temperature overheat.
  - Evaporator and condenser anti-freeze.
  - Low discharge superheat.

Effective Failure Diagnostic

- Carrier® SmartVu™ control system has more than 100 failure diagnostic function. Users can easily access chiller operation parameters via touch screen. If control system detects failure the alarm will be initiated and related code will be recorded in alarm menu. The alarm records, up to 50, can be automatically saved by control system. Carrier service technician can read and delete alarm records by Carrier service/PCDCT tools.
- The control system can automatically send out email alarm to customer or service technician.

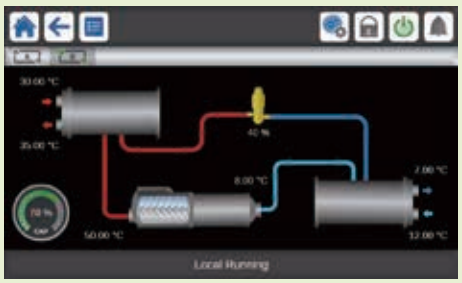
Intelligent Remote Connection and Control

- Carrier® SmartVu™ control panel supports CCN, BACnet IP, Modbus TCP/IP and Modubs RTU protocols, with which chiller can seamlessly connect with the Building Automation System or the i-Vu™/WebCTRL control network. Moreover, LonWorks, J-Bus and BACnet MSTP is also supported with optional gateway.
- An industrial Internet intelligent protocol module WIFI dongle housed in electrical cabinet has the function of conversion and transmission of data and can connect the field chiller controllers through the wireless network. Chiller operational data can be transmitted to the remote server (Smart Service by Carrier) via wireless network, 4G, etc., so as to monitor chiller data and fault alarm.
- Carrier Smart Service (optional) based on “Big Data Processing” provides value added customer service such as online data management and analysis, daily and key performance reports, prognostics and preventative maintenance and graphic data trend. The enhanced data management and analysis will help achieve continuous optimization of the chiller and system operation.
- Carrier Smart Service changes how equipment is serviced and maintained. Carrier service technicians now utilize mobile devices with remote access to put real-time chiller data and service history in the palm of their hands. With advance notification of problems, technicians arrive at the jobsite more informed, which leads to faster problem resolution and reduced mean time to repair.



Main Page

- Control system main page operation and primary parameters monitored:
  - Main page button
  - Menu page button
  - Log in/Language button
  - Start-up/Stop page button
  - Alarm menu button
  - Setting point
  - Chiller load percentage
  - Condensing water pump status
  - Chilled water pump status
  - Condenser water inlet/outlet temperature
  - Evaporator water inlet/outlet temperature



- Customer can easily read following primary information of chiller, components status and access to other interfaces from this page:
  - Temperature/Pressure page
  - Input/Output parameter page
  - Water system parameter page
  - Operation time
  - Mode

Performance data 30XW

Model			30XW													
			0262	0312	0352	0412	0422	0452	0552	0622	0652	0702	0812	0852	0902	0922
Capacity		kW	249.5	303.6	366.9	424.0	452.7	468.9	541.8	621.0	662.3	715.3	784.5	826.1	852.4	890.6
		USRT	71	86	104	121	129	133	154	177	188	203	223	235	242	253
COP		kW/kW	5.28	5.31	5.30	5.29	5.29	5.45	5.69	5.60	5.51	5.61	5.60	5.52	5.83	5.66
Evaporator	Flow rate	L/s	10.7	13.1	15.8	18.2	19.5	20.2	23.3	26.7	28.5	30.8	33.7	35.5	36.7	38.3
	Water Pressure drop	kPa	16.4	22.8	29.5	34.5	36.7	27.6	36.3	34.0	33.7	38.3	39.9	48.3	54.3	62.2
	Water connection	DN	125	125	125	125	125	125	125	150	150	150	200	150	150	200
Condenser	Flow rate	L/s	13.5	16.4	19.6	22.7	24.4	25.1	32.1	33.3	35.4	38.1	41.8	44.4	45.7	47.8
	Water Pressure drop	kPa	32.4	43.4	54.6	34.7	36.4	36.4	55.0	47.0	51.8	54.3	29.6	36.2	42.2	50.6
	Water connection	DN	125	125	125	125	125	125	125	150	150	150	200	200	200	200
Compressor	Circuit A	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Circuit B	No.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Min. capacity	%	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Motor	Power	V-Ph-Hz	400-3-50													
	Input power	kW	47.2	57.2	69.2	80.1	85.6	86.1	95.2	110.7	120.3	127.4	139.9	149.7	146.1	157.4
Refrigerant Charge			HFC-134a													
	Circuit A	kg	78	78	78	100	85	100	110	150	150	140	160	150	150	176
	Circuit B	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shipping weight*		kg	2220	2281	2316	2692	2707	2846	2934	3637	3620	3647	3774	3808	3827	4012
Operation weight		kg	2002	2063	2098	2518	2518	2580	2684	3509	3486	3509	3688	3711	3923	3979
Dimension	Length	mm	2742	2742	2742	2746	2746	2746	2763	3084	3056	3084	2780	2780	3080	3080
	Width	mm	960	960	960	970	970	970	970	1119	1119	1119	1085	1085	1135	1135
	Height	mm	1568	1568	1568	1694	1694	1693	1693	1873	1849	1873	1950	1900	1900	1950

Operation condition: Evaporator leaving water temperature 6.7℃, water flow rate per capacity is 0.043 l/s·kW, fouling factor=0.018m^2K/kW
Condenser entering water temperature 29.4℃, water flow rate per capacity is 0.054 l/s·kW, fouling factor=0.044m^2K/kW
Above are recommended models. Carrier can offer more models and computer selections at required conditions. For details, please contact Carrier local agencies.
*The shipment weight is only base unit and wooden crating, excluding refrigerant and water inside.

improve buildings™

Carrier improves the world around us; Carrier improves people's lives; our products and services improve building performance; our culture of improvement will not allow us to rest when it comes to the environment.

Carrier®

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