



turn to the experts™ 

AQUAFORCE WATER-COOLED LIQUID CHILLER

AQUAFORCE™

PRO-DIALOG PLUS



30XW

Refrigerant HFC-134a
Nominal cooling capacity 469-1748kW

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 requirements in terms of energy efficiency, flexibility of use and compactness. They use the most reliable technologies available today:

- Twin-rotor screw compressors with a variable capacity valve.
- Single refrigerant R134a.
- Touch-screen Pro-Dialog control system(optional).
- Flooded heat exchangers that are mechanically cleanable

To meet to all environmental and economic requirements, the 30XW is available in two efficiency classes:

- Standard-efficiency 30XW units that offer an optimized 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).

Features

Premium full load and part load performance

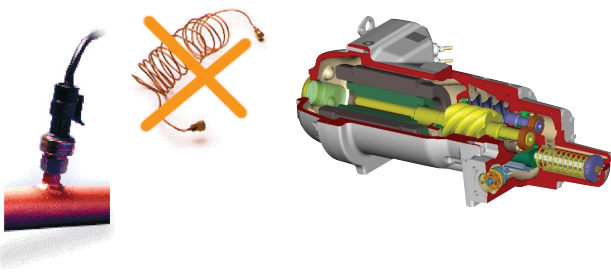
- New twin-rotor screw compressor specifically designed for HFC-134a equipped with a high-efficiency motor and a variable capacity valve that permits exact matching of the cooling capacity to the load.
- Flooded multi-pipe evaporator and condenser for increased heat exchange efficiency. The evaporator 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.
 - All compressor components are easily accessible on site minimizing down-time.
 - Protection increased by an electronic board.
- Refrigerant circuit
 - Two independent refrigerant circuits (from 800 kW upwards); the second one automatically takes over, if the first one develops a fault, maintaining partial cooling under all circumstances.
- 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.
- 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 flare connections are used.
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge.
 - Discharge line shut-off valve and liquid line service valve for simplified 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 floor space in the plant room.
- Simplified electrical connections
 - Main disconnect switch with high trip capacity.
 - Transformer to supply the integrated control circuit (400/24 V).

- Simplified 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 verification of the instruments, expansion devices and compressors.

Pro-Dialog control

Pro-Dialog combines intelligence with operating simplicity. 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.

- 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.
 - Master/slave control of two chillers operating in parallel with operating time equalization and automatic change-over in case of a unit fault.
- Ease-of-use
 - User interface with large touch screen (120 x 99 mm) (optional) for intuitive access to the operating parameters. The information is in clear text and can be displayed in local language (please contact your distributor).

Remote management (standard)

The 30XW is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

The 30XW also communicates with other building management systems via optional communication gateways.

A connection terminal allows remote control of the 30XW by wired cable:

- Start/stop: opening of this contact will shut down the unit.
- Dual set-point: closing of this contact activates a second set-point (example: unoccupied mode).
- Demand limit: closing of this contact limits the maximum chiller capacity to a predefined value.
- Operation indication: this volt-free contact indicates that the chiller is operating (cooling load) or that it is ready to operate (no cooling load).
- Alert indication: this volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
- Alarm indication: this volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.



ProDialog+(standard)

Performance data

Model			30XW															
			0452	0502	0552	0652	0702	0802	0852	0902	1002	1052	1152	1352	1402	1502	1602	1702
Capacity		kW	469	520	538	662	715	772	826	852	1003	1044	1128	1280	1436	1501	1609	1708
		USRT	133	148	153	188	203	220	235	242	285	297	321	364	408	427	457	486
Compressor	Circuit A	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Circuit B	No.									1	1	1	1	1	1	1	1
Evaporator	Outlet tem.	degC	6.7															
	Flow rate	L/s	20	22	23	28	31	33	36	37	43	45	48	55	62	65	69	73
	Water Pressure drop	Kpa	28	35	36	34	38	46	48	54	56	62	54	66	74	78	78	74
	Water connection	Dg	125	125	125	150	150	150	150	150	150	150	200	200	200	200	200	200
	Fouling factor	(sqm-K)/KW	0.018															
Condenser	Inlet tem.	degC	29.4															
	Flow rate	L/s	25	28	29	36	38	41	44	46	54	56	61	69	77	81	86	92
	Water Pressure drop	Kpa	36	45	46	52	58	69	36	42	47	52	41	60	65	59	51	56
	Water connection	Dg	125	125	125	150	150	150	200	200	200	200	200	200	200	200	200	200
	Fouling factor	(sqm-K)/KW	0.044															
Motor	Power	V-Ph-Hz	380/400/415-3-50															
	Input power	kW	86	99	98	122	130	145	150	146	183	196	202	221	254	263	279	299
Shipping weight(with refrigerant)		kg	2946	2983	3032	3770	3770	3778	3958	3977	5454	5491	5781	7146	7549	7664	8955	8853
Operation weight		kg	2580	2617	2666	3486	3486	3493	3711	3923	5161	5198	5553	6995	7352	7566	8535	8953
Dimension	Length	mm	2746	2746	2746	3056	3056	3056	2780	3080	4008	4008	4008	4695	4695	4695	4761	4760
	Width	mm	970	970	970	1119	1119	1119	1085	1135	1050	1050	1050	1188	1231	1231	1338	1965
	Height	mm	1693	1693	1693	1849	1849	1849	1900	1900	1846	1846	1896	2064	1998	2064	2307	1537

Model			30XW									
			0502P	0552P	0702P	0802P	1002P	1152P	1352P	1402P	1602P	1752P
Capacity		kW	506	572	730	784	1032	1146	1306	1419	1616	1748
		USRT	144	163	207	223	293	326	371	403	460	497
Compressor	Circuit A	No.	1	1	1	1	1	1	1	1	1	1
	Circuit B	No.					1	1	1	1	1	1
Evaporator	Outlet tem.	degC	6.7									
	Flow rate	L/s	22	25	31	34	44	49	56	61	69	75
	Water Pressure drop	Kpa	21	26	25	28	34	47	45	54	44	51
	Water connection	Dg	150	150	200	200	200	200	200	200	250	250
	Fouling factor	(sqm-K)/KW	0.018									
Condenser	Inlet tem.	degC	29.4									
	Flow rate	L/s	27	31	39	42	55	62	70	77	87	94
	Water Pressure drop	Kpa	34	41	34	39	28	37	36	44	36	43
	Water connection	Dg	150	150	200	200	200	200	250	250	250	250
	Fouling factor	(sqm-K)/KW	0.044									
Motor	Power	V-Ph-Hz	380/400/415-3-50									
	Input power	kW	85	96	121	134	173	193	213	232	262	283
Shipping weight(with refrigerant)		kg	3275	3312	4331	4349	6674	6749	8995	9418	10848	10848
Operation weight		kg	2963	3025	4155	4173	6609	6684	8945	9368	10948	10948
Dimension	Length	mm	3055	3055	3286	3286	4694	4694	4783	4783	4809	4809
	Width	mm	1008	1008	1135	1135	1070	1070	1985	1985	2160	2160
	Height	mm	1743	1743	1949	2949	1998	1998	1531	1520	1586	1586

Working condition: Evaporater:6.7°C, 0.043 l/s-kW; condenser:29.4°C, 0.054 l/s-kW

Electrical parameters 30XW (including option 81)

mid efficiency units 30XW		0452	0502	0552	0652	0702	0802	0852	0902	1002	1052	1152	1352	1402	1502	1602	1702	
Power circuit																		
Rated Voltage	V-ph-Hz	400-3-50																
Voltage Range	V	360-440																
Control circuit																		
24 V per internal transformer																		
Nominal start-up current*																		
Circuit A	A	414	414	414	587	587	587	587	587	414	414	414	587	587	587	587	587	587
Circuit B	A									414	414	414	414	587	587	587	587	587
Option 81	A									558	574	574	747	817	801	825	819	
Maximum start-up current **																		
Circuit A	A	414	414	414	587	587	587	587	587	414	414	414	587	587	587	587	587	587
Circuit B	A									414	414	414	414	587	587	587	587	587
Option 81	A									631	656	656	829	904	904	938	938	
Cosine Phi																		
Nominal ***		0.86	0.87	0.87	0.88	0.89	0.90	0.90	0.90	0.87	0.87	0.87	0.88	0.88	0.88	0.88	0.90	0.90
Maximum †		0.89	0.90	0.90	0.90	0.91	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.91	0.90	0.92	0.92	0.92
Maximum power draw ††																		
Circuit A	kW	134	151	151	184	200	223	223	223	150	151	151	184	200	200	232	232	232
Circuit B	kW									134	151	151	151	184	184	232	232	232
Option 81	kW									284	301	301	334	384	384	464	464	464
Nominal current draw ***																		
Circuit A	A	144	162	162	193	214	232	232	250	162	162	162	193	230	214	238	232	232
Circuit B	A									144	162	162	162	210	193	238	232	232
Option 81	A									306	324	324	355	440	407	476	464	464
Maximum current draw (Un) ††																		
Circuit A	A	217	242	242	295	317	351	351	351	242	242	242	295	295	317	351	351	351
Circuit B	A									217	242	242	242	295	295	351	351	351
Option 81	A									459	484	484	537	590	612	702	702	702
Maximum current draw (Un -10%) †																		
Circuit A	A	230	260	260	304	340	358	358	358	260	260	260	304	304	340	358	358	358
Circuit B	A									230	260	260	260	304	304	358	358	358
Option 81	A									490	520	520	564	608	644	716	716	716

- * Instantaneous start -up current (locked rotor current of the largest compressor + the rated load current of other smaller motors at nominal operating conditions)
Values obtained at GB standard condition: evaporator temperature entry/leave water = 12°C /7°C , condenser temperature entry/leavewater = 30°C /35°C
- ** Instantaneous start -up current (locked rotor current of the largest compressor + the maximum load current of other smaller motors at maximum unit conditions)
Values obtained at operation with maximum unit power input
- *** Values obtained at GB condition: evaporator temperature entry/leave water = 12°C /7°C , condenser temperature entry/leavewater = 30°C /35°C
- † Values obtained at operation with maximum unit power input
- †† Values obtained at operation with maximum unit power input
Values given on the name plate

Electrical parameters 30XW (including option 81)

high efficiency units 30XW		0502P	0552P	0702P	0802P	1002P	1152P	1352P	1402P	1602P	1752P
Power circuit											
Rated Voltage	V-ph-Hz	400-3-50									
Voltage Range	V	360-440									
Control circuit											
24 V per internal transformer											
Nominal start-up current*											
Circuit A	A	414	414	587	587	414	414	587	587	587	587
Circuit B	A					414	414	414	587	587	587
Option 81	A					556	574	747	791	801	819
Maximum start-up current **											
Circuit A	A	414	414	587	587	414	414	587	587	587	587
Circuit B	A					414	414	414	587	587	587
Option 81	A					631	656	829	882	904	938
Cosine Phi											
Nominal ***		0.86	0.87	0.89	0.89	0.86	0.87	0.88	0.88	0.89	0.90
Maximum †		0.89	0.90	0.90	0.91	0.89	0.90	0.90	0.90	0.91	0.92
Maximum power draw ††											
Circuit A	kW	134	151	184	200	134	151	184	184	200	232
Circuit B	kW					134	151	151	184	200	232
Option 81	kW					267	301	334	367	399	464
Nominal current draw ***											
Circuit A	A	144	162	193	214	144	162	193	204	214	232
Circuit B	A					144	162	162	204	214	232
Option 81	A					288	324	355	407	428	464
Maximum current draw (Un) ††											
Circuit A	A	217	242	295	317	217	242	295	295	317	351
Circuit B	A					217	242	242	295	317	351
Option 81	A					434	484	537	590	634	702
Maximum current draw (Un -10%) †											
Circuit A	A	230	260	304	340	230	260	304	304	340	358
Circuit B	A					230	260	260	304	340	358
Option 81	A					460	520	564	608	680	716

* Instantaneous start -up current (locked rotor current of the largest compressor + the rated load current of other smaller motors at nominal operating conditions)
Values obtained at GB standard condition: evaporator temperature entry/leave water = 12°C /7°C , condenser temperature entry/leavewater = 30°C /35°C

** Instantaneous start -up current (locked rotor current of the largest compressor + the maximum load current of other smaller motors at maximum unit conditions)

Values obtained at operation with maximum unit power input

*** Values obtained at GB condition: evaporator temperature entry/leave water = 12°C /7°C , condenser temperature entry/leavewater = 30°C /35°C

† Values obtained at operation with maximum unit power input

†† Values obtained at operation with maximum unit power input

Values given on the name plate

Electrical parameters 30XW (PT150A)

mid efficiency units 30XW		0452	0502	0552	1002	1052	1152
high efficiency units 30XW		0502P	0552P		1002P	1152P	
Power circuit							
Rated Voltage	V-ph-Hz	400-3-50					
Voltage Range	V	360-440					
Control circuit				24 V per internal transformer			
Nominal start-up current*							
Circuit A	A	587	587	587	587	587	587
Circuit B	A	-	-	-	587	587	587
Option 81	A	-	-	-	757	749	757
Maximum start-up current **							
Circuit A	A	587	587	587	587	587	587
Circuit B	A	-	-	-	587	587	587
Option 81	A	-	-	-	887	862	887
Cosine Phi							
Nominal ***		0.88	0.88	0.88	0.88	0.87	0.88
Maximum ††		0.91	0.91	0.92	0.92	0.91	0.92
Maximum power draw ††							
Circuit A	kW	173	191	191	190	173	191
Circuit B	kW	-	-	-	174	173	191
Option 81	kW	-	-	-	364	346	382
Nominal current draw ***							
Circuit A	A	162	171	171	171	162	171
Circuit B	A	-	-	-	162	162	171
Option 81	A	-	-	-	333	324	342
Maximum current draw (Un) ††							
Circuit A	A	275	300	300	300	275	300
Circuit B	A	-	-	-	275	275	300
Option 81	A	-	-	-	575	550	600
Maximum current draw (Un -10%)†							
Circuit A	A	300	330	330	330	300	330
Circuit B	A	-	-	-	300	300	330
Option 81	A	-	-	-	630	600	660

* Instantaneous start -up current (locked rotor current of the largest compressor + the rated load current of other smaller motors at nominal operating conditions)
Values obtained at GB standard condition: evaporator temperature entry/leave water = 12°C /7°C , condenser temperature entry/leavewater = 18°C /29°C

** Instantaneous start -up current (locked rotor current of the largest compressor + the maximum load current of other smaller motors at maximum unit conditions)
Values obtained at operation with maximum unit power input

*** Values obtained at GB condition: evaporator temperature entry/leave water = 12°C /7°C , condenser temperature entry/leavewater = 18°C /29°C

† Values obtained at operation with maximum unit power input

†† Values obtained at operation with maximum unit power input

Values given on the name plate

Operating Range

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

* Evaporator maximum leaving temperature during operation for PT150A is 15°C

** Condenser maximum leaving temperature during operation for PT150A is 63°C

Options & accessories

Options	NO	Description	Advantages	Use
Medium Brine	5	Brine application down to -6°C leaving fluid temperature	Covers specific application such as ice storage and industrial processes	30XW0452/0552/0702/0852/1002/1152/1352/1452/1502/1662/1702 30XW0502P/0552P/1002P
Low Brine	6	Brine application down to -12°C leaving fluid temperature	Covers specific application such as ice storage and industrial processes	30XW1152
		*Use of air-cooled unit compressors		30XW0502P
		*Increase size of electrical componts according to compressor motor electrical characteristics		30XW0552P 30XW1002P
Single power connection	81	This option is required to allow to connect on single power supply line to one single location where std machine require two	Quick and easy installation	30XW1002-1702 30XW1002P-1752P
Evaporator & Condenser water pressue 1.6MPa	104	Reinforced evaporator & condenser for extension of the maximum water-side service pressure to 1.6MPa	Covers applications with a high water column(high buildings)	30XW0452-1702 30XW0502P-1752P
Evaporator & Condenser water pressue 2.1MPa	104A16	Reinforced evaporator & condenser for extension of the maximum water-side service pressure to 2.1MPa	Covers applications with a high water column(high buildings)	30XW0452-1702 30XW0502P-1752P
Evaporator with reversed water connection	107E	Evaporator with reversed water inlet/outlet	Simplification of the water piping	30XW0452-1702 30XW0502P-1752P
Condenser with reversed water connection	107C	Condenser with reversed water inlet/outlet	Simplification of the water piping	30XW0452-1702 30XW0502P-1752P
CCN to J bus gateway	148B	Two way protocol converter board between CCN and J-Bus for easy connection to BMS.	Easy connection by communication bus to a building management system	30XW0452-1702
		Consist of:		30XW0502P-1752P
		-Electronic board mounted in the unit electrical cabinet -Automatic configuration at start up		
CCN to BAC Net/ Modbus gateway	148C	Two way protocol converter board between CCN and BAC Net/Modbus for easy connection to BMS.	Easy connection by communication bus to a building management system	30XW0452-1702
		Consist of:		30XW0502P-1752P
		-Electronic board mounted in the unit electrical cabinet -Automatic configuration at start up		
CCN to Lon work gateway	148D	Two way protocol converter board between CCN and Lon walk for easy connection to BMS.	Easy connection by communication bus to a building management system	30XW0452-1702
		Consist of:		30XW0502P-1752P
		-Electronic board mounted in the unit electrical cabinet -Automatic configuration at start up		
High condensing temperature unit (up to 63°C leaving condenser water temperature)	150	Increased condenser leaving water temperature up to 63°C.	Allows applications with high condensing temperature(for heat reclaim or dry cooler applications)	30XW0452-0552
		Modifications:		30XW1002-1152
		*Use of air-cooled unit compressors		30XW0502P-0552P
		*Increase size of electrical componts according to compressor motor electrical characteristics		30XW1002P-1152P

Options & accessories

Options	NO	Description	Advantages	Use
Heat pump(Max condenser leaving temp 63°C)	150A	Heat pump control logic to control condenser LWT	Allows heating applications with max condenser leaving temp 63°C	30XW0452-0552
		Modifications:		30XW1002-1152
		*Use of air-cooled unit compressors		30XW0502P-0552P
		*Increase size of electrical componts according to compressor motor electrical characteristics		30XW1002P-1152P
		*condenser insulation		
		*Heat pump Control logic		
Condenser maxium leaving temperature limited to 45°C	150B	Control configuration to limit operation at 45°C maximum condenser leaving temperature	Avoids oversizing of the protection elements and the power cables	30XW0452-1702
				30XW0502P-1752P
Heat pump(Max condenser leaving temp 50°C)	150D	Heat pump control logic to control condenser LWT	Allows heating applications with max condenser leaving temp 50°C	30XW0452-1702
		Modifications:		30XW0502P-1752P
		*condenser insulation		
		*Heat pump Control logic		
Condenser water valve control (0-10V signal)	152	Output signal (0-10V) to control the condenser water inlet valve	Used for applications with cold water at the condenser inlet (well water). In this case the valve controls the water entering temperature to maintain an acceptable condensing pressure	30XW0452-1702
		Consist of:		
		- One 8DO+4AI/2AO Board		
		- Connector for 3 way valve		
		Note: Power supply for water valve is not included		30XW0502P-1752P
Energy management module	156	Remote control module. Additional contacts for an extension of the unit control functions (without communication bus)	Easy connection by wired connection to a building management system	30XW0452-1702
		Consist of:		30XW0502P-1752P
		- Electrino board mounted in the unit electrical cabinet		
Touch screen display	158	Touch screen display	Easy operation	30XW0452-1702
				30XW0502P-1752P
Evaporator flanged connections	314E	Victaulic to Flange water connections	Easy installation	30XW0452-1702
				30XW0502P-1752P
Condenser flanged connections	314C	Victaulic to Flange water connections	Easy installation	30XW0452-1702
				30XW0502P-1752P
Nitrogen charge	320	Unit nitrogen factory charged.	Less weight. No refrigerant charged	30XW0452-1702
				30XW0502P-1752P
Discharge shut off valve	321	Allows refrigerant to be stored inside the chiller during servicing	Reducing refrigerant loss and eliminating time-consuming transfer procedures	30XW0452-1702
				30XW0502P-1752P
Australia code	312A	Meets Australia government pressure vessel code AS 1210 and AS 4343	Meets Australia government pressure vessel code AS 1210 and AS 4343	30XW0452-1702
				30XW0502P-1752P
Multi-piece shipment	51	"Side-by-side" Units only. Unit shipped in two parts bolted together, flanges on piping connections, no refrigerant charge (Nitrogen holding charge)	Easy installation	30XW1662-1702
				30XW1352P-1752P
Low noise	257	Provide 2 to 4 dBA sound attenuation vs std to meet low noise application	Lower operating sound levels	30XW0452-1702
		* Innovative lagging used		30XW0502P-1752P

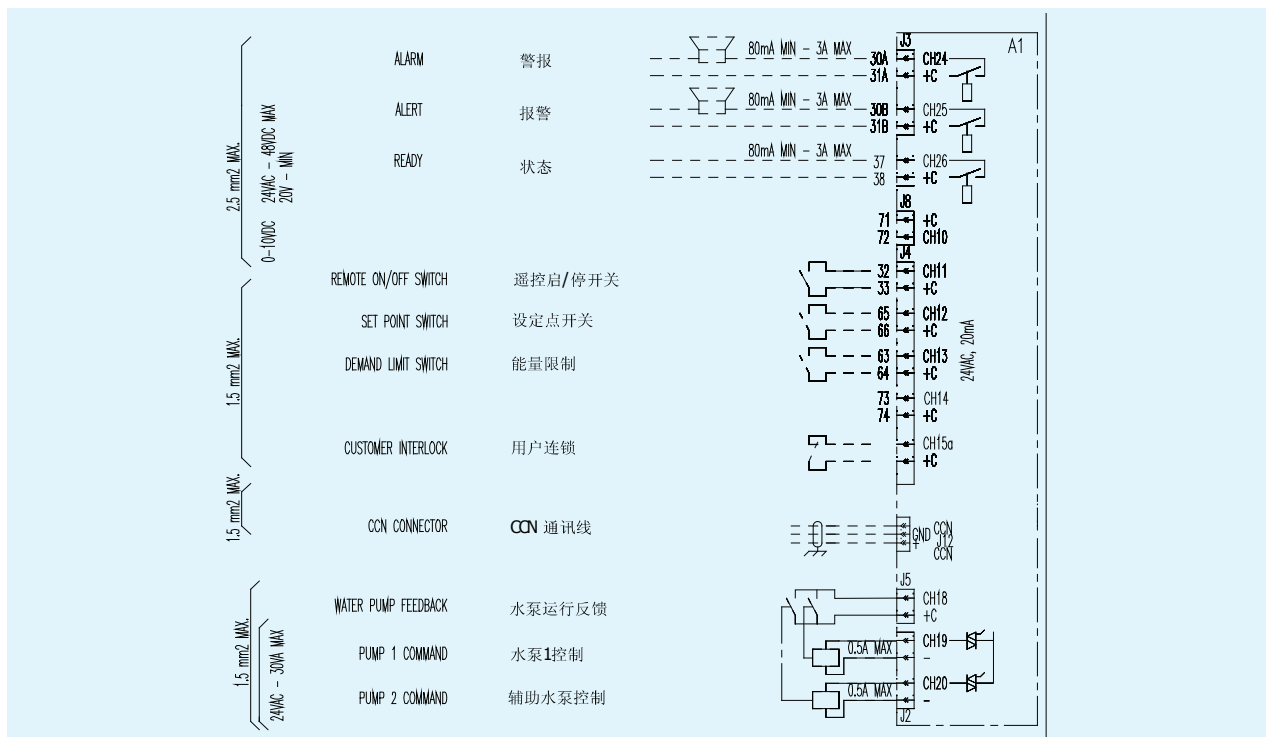
Options & accessories

Options	NO	Description	Advantages	Use
Super low noise	258	Provide 6 to 8 dBA sound attenuation vs std to meet super low noise application	Lower operating sound levels	30XW0452-1702
		* Sound enclosure used		30XW0502P-1752P
		* rust prevention features		
Super low noise	258A	Provide 6 to 8 dBA sound attenuation vs std to meet super low noise application	Lower operating sound levels with waterproof	30XW0452-1702
		* Sound enclosure used		30XW0502P-1752P
		* Waterproof, rust prevention features		
Super low noise	258B	Provide 8 to 10 dBA sound attenuation vs std to meet super low noise application	Lower operating sound levels	30XW0452-1702
		* Sound enclosure used		30XW0502P-1752P
		* rust prevention features		
Soft starter	25	Provide unit soft starting, uninterrupted changeover without current peak that would stress power supply	Lower the start-up current	30XW0452-1702
		*Using a soft starter instead of Y-D starters		30XW0502P-1752P

Notes:

1. Medium Brine option (PT005) only suitable for 30XW0502P/0552P/1002P/0452/0552/0702/0852/1002/1152/1352/1452/1502/1662/1702
2. Low Brine option (PT006) only suitable for 30XW0502P/0552P/1002P/1152
 Compatibility: Medium brine option PT005 is not compatible with PT150/PT150A/PT312A.
 Low Brine options PT006 is not compatible with PT150/PT150A/PT150D/PT312A .
 Australia code PT312A is not compatible with PT005/PT006/PT104/PT104A16 .
3. PT150A only suitable for 30XW0452/0502/0552/1002/1052/1152/0502P/0552P/1002P/1152P
4. Condenser water valve control option is not include 3 way valve and power supply for water valve.

Wiring Diagram



Guide Specifications

General description

Factory assembled single piece water-cooled liquid chiller. Contained within the unit shall be all factory wiring, piping, controls, refrigerant charge (HFC-134a), refrigeration circuits set, screw compressors, electronic expansion valves and equipment required prior to field start-up.

Quality assurance

1. Unit construction shall comply with standard including the following:

- A. Code of design of heating, ventilation and air conditions (GBJ 19-87, GB50019-2003)
- B. GB/T 18430.1-2007, ARI Standard 550/590-2003
- C. ISO3746-1996 and ARI575-1987

2. Unit shall be designed, manufactured and tested in a facility with a quality management system certified ISO 9001 and environmental management system ISO 14001

3. Unit shall be run tested at the factory.

4. Unit components shall be capable of withstanding 60°C (66°C for PT150A) storage without damage, failure, refrigerant loss, or safety risks.

Product features

1. Compressors:

- A. Unit shall have semi-hermetic twin-screw compressors with internal relief valve and check valve to avoid reverse rotation on shut down.
- B. Each compressor shall be equipped with a discharge shut-off valve.
- C. The discharge shall also be equipped with a muffler to reduce discharge gas pulsations.
- D. Capacity control shall be provided by a variable control slide valve capable of reducing compressor capacity down to 15% of full load. Compressor shall start in unloaded condition.
- E. Motor shall be cooled by suction gas and protected by internal winding temperature sensors. Compressor bearings shall be designed for minimum 73000 hours at maximum operating conditions.
- F. Lubrication oil system shall include pre-filter and external filter capable of filtration to 5 microns.

2. Evaporator:

- A. Unit shall be equipped with a single evaporator.
- B. Evaporator shall be manufactured, tested and stamped in accordance with the GB150-1999.
- C. The maximum refrigerant-side working pressure will be 1500kPa (2350kPa for PT150A), and the maximum waterside pressure will be 1000kPa (1600kPa, 2100kPa as an option).
- D. The evaporator shall be mechanically cleanable, shell-and-tube type with removable heads. Tubes shall be internally and externally grooved, seamless-copper, and shall be rolled into tube sheets. Shell shall be insulated with 19mm closed-cell foam with a maximum K factor of 0.28. Evaporator thermal insulation shall be factory fitted.
- E. The evaporator shall have a drain and vent in each head.
- F. The evaporator shall incorporate an active refrigerant level control system to ensure optimum heat transfer performance under all load conditions.
- G. Design shall incorporate either 1 or 2 independent refrigerant circuits

Guide Specifications

- H. Chiller shall have only one water inlet & outlet connection with victaulic couplings to avoid vibrations transmission and accept small misalignment (water connection kit on demand).
- I. Evaporator shall be fitted with electronic auto setting water flow switch. Paddle switches or differential pressure switches shall not be acceptable.

3. Condenser:

- A. Unit shall be equipped with a single condenser.
- B. Condenser shall be manufactured, tested and stamped in accordance with the GB150-1999.
- C. The maximum refrigerant-side working pressure will be 1500kPa (2350kPa for PT150A), and the maximum waterside pressure will be 1000kPa (1600kPa, 2100kPa as an option).
- D. The condenser shall be mechanically cleanable shell-and-tube type with removable heads.
- E. Tubes shall be internally and externally grooved, seamless-copper, and shall be rolled into tube sheets.
- F. Design shall incorporate either 1 or 2 independent refrigerant circuits and the oil separator.
- G. The condenser shall have a drain and vent in each head.
- H. Chiller shall have only one water inlet & outlet connection with victaulic couplings to avoid vibrations transmission and accept small misalignment (water connection kit on demand).

4. Refrigeration circuits:

- A. Refrigerant circuit components shall include, compressor, oil separator, high and low side pressure relief devices, compressor discharge and liquid line shutoff valves, refrigerant economizer, filter driers, moisture indicating sight glasses, long stroke electronic expansion device, and complete operating charge of both refrigerant HFC-134a and compressor oil.
- B. To facilitate service and maintenance and avoid refrigerant charge transfers, it must be possible to isolate the following components and systems independently: filter driers, oil filters, expansion devices and compressor (with service valves option).

5. Controls:

- A. Unit controls shall include as a minimum: microprocessor with non-volatile memory, picture guided unit/operator interface, the LOCAL/OFF/REMOTE/CCN selector and a touch-screen display with with multiple language capability.
- B. Pressure sensors shall be installed to measure suction, discharge, and oil pressure.
- C. Thermistors shall be installed to measure cooler entering and leaving temperatures (on cooler and condenser side).
- D. Unit shall be capable of performing the following functions:
 - Automatic change-over and cycling of compressors to equalize running hours and number of starts.
 - EXV control, based on throttling optimizes evaporator charging, ensuring condenser superheat and sub-cooling.
 - Capacity control based on leaving chilled fluid temperature with return fluid temperature sensing.
 - Limit the chilled fluid temperature pull-down rate at start-up to an adjustable range of 0.1°C to 1.1°C per minute to prevent excessive demand spikes at start-up.

- Enable reset of leaving chilled water temperature according to the return water temperature or by means of a 0-10V signal.
- Provide a dual set point for the leaving chilled water temperature activated by a remote contact closure signal or by the built in time clock.
- Enable a 2-level demand limit control (between 0 and 100%) or a maximum current drawn limit activated by a remote contact closure or by the built in time clock.
- Control evaporator water pump and the condenser pump.
- Allow two time scheduling programs to enable unit start-up control, demand limit and set-point changes.
- Enable lead lag control of two chillers running in series or parallel.

6. Diagnostics:

- A. Display module shall be capable of displaying set points, system status including temperatures, pressures, current for each compressor, run time and percent loading.
- B. The control system shall allow a quick test of all machine elements to verify the correct operation of every switch, circuit breaker, contactor etc. before the chiller is started.

7. Safeties:

- A. Unit shall be equipped with all necessary components, and in conjunction with the control system shall provide the unit with protection against the following:
 - Reverse rotation.
 - Low chilled water temperature.
 - Low oil pressure (per compressor).
 - Current imbalance.
 - Compressor thermal overload
 - Automatic compressor unloading in case of excessive condensing temperature
 - High pressure.
 - Electrical overload.
 - Loss of phase.
- B. Control shall provide separate general alert (minor incident) and alarm (circuit down) remote indication.

8. Operating characteristics:

- A. Unit shall be capable of starting with 13°C entering water temperature to the condenser.
- B. Unit shall be capable of starting with 35°C entering water temperature to the evaporator.

9. Electrical characteristics:

- A. Unit shall operate on 3-phase power supply without neutral.
- B. Control voltage shall be supplied by a factory-installed transformer.
- C. Unit shall be supplied with factory-installed electrical disconnect/isolator switch integrating main fuses.
- D. Unit shall have a factory installed star/delta starter as standard to limit electrical inrush current.

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