



Water Cooled Water Chiller

220kW-3100kW

Vicot Group is a high-tech corporation specialized in R&D, production, sales and service of renewable energy products.

The corporation has almost 2000 staff and nine business divisions and/or centers as following: Solar Thermal Energy Equipment Division, Vacuum Tube Division, Gas Fired Air Conditioning Division, Electrical Air Conditioning Division, Domestic Marketing & Sales Division, Export & Import Division, Administrative & Human Resource Center, Company Management Center and General Manager Office.

Our production base locates in Solar City, Dezhou, China, it covers an area of 150,000 m² with modern workshops and office buildings of more than 80,000 m². Annual yield capabilities are as follows: 100,000 electrical AC units; 10,000 gas fired AC units; 200,000 m² of collectors; 100,000 pieces of tubes; 5,000 standard sets of solar air conditioning system (20kW/ standard set), 200,000 standard sets of S.A.P central hot water system (10T/ standard set), 10,000 standard sets of S.A.P central distributed heating system (40kW/ standard set) and 500 standard sets of solar boiler system (700kW/ standard set). Designed annual production value reaches RMB 5 billion.

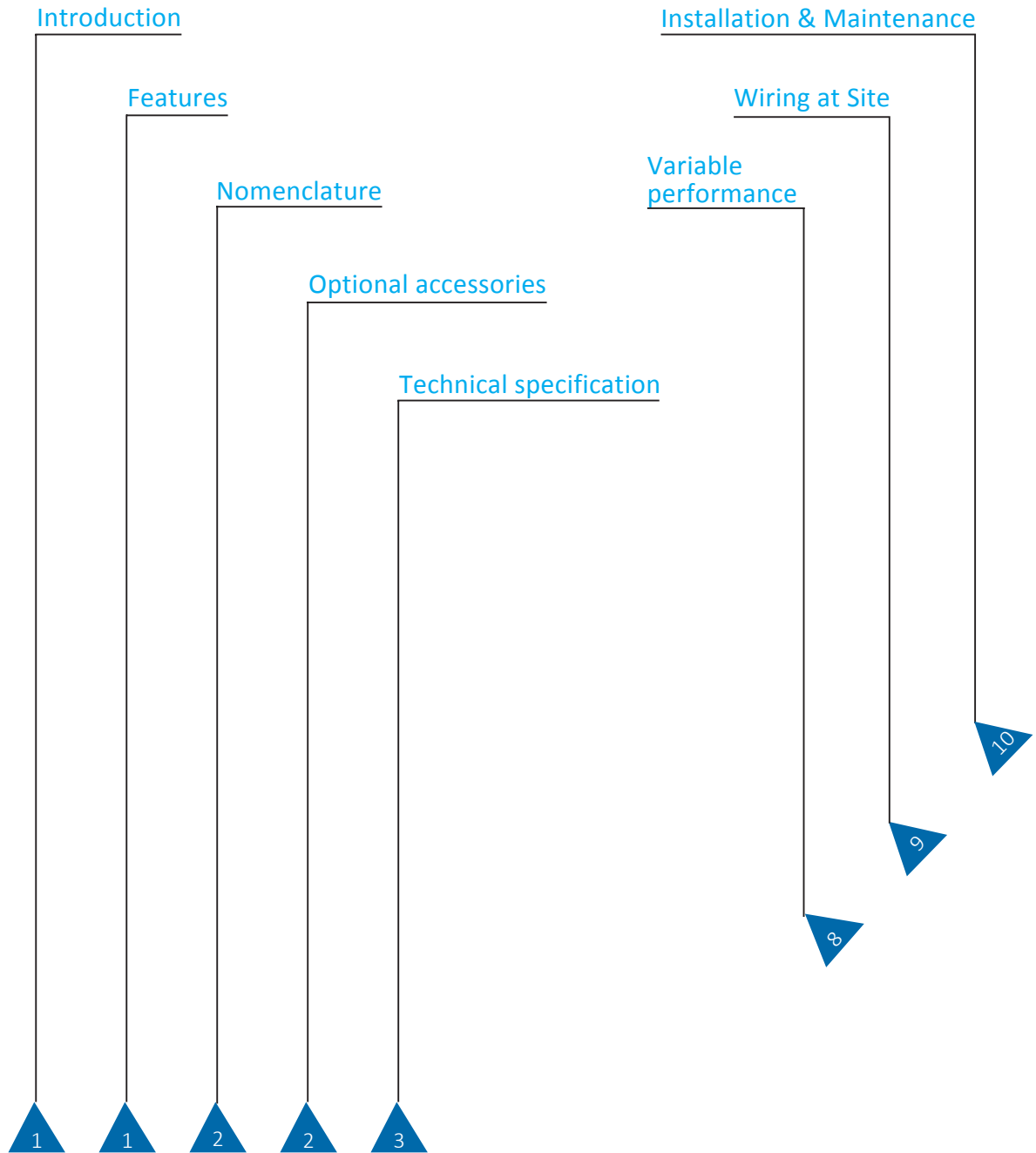
With the mission of "The same breath, energy saving together", the corporation realizes energy saving and environment protection by focusing on effective utilization of solar energy, air source energy, geothermal energy and other renewable energies in cooling, heating and domestic hot water fields, in pursuit of technology innovations in the field of global renewable energy utilization.

After years' practice in geothermal chiller & heat pump, air source chiller and heat pump and floor heating fields, Vicot accumulates rich experience in development and production and reaches a nationally advanced level. With a total investment of RMB 16 million in April 2008, after 3 years' collaboration with more than 20 global universities and research institutes in sequence, Vicot successfully and innovatively launched solar air conditioning system, S.A.P central hot water system, S.A.P central distributed heating system, solar boiler system, having more than 150 patents, large scale production of them has been realized, the past and current scientists and engineers' cherished wish has been realized. It places China at the world top level in solar medium temperature application field, it turns the dream into truth, for solar energy scale application in commercial and industrial field.

In the meantime of developing the technology of world leading new energy product, the corporation is operated with global advanced ERP technique, UPDI\WMS barcode storage system and ABC cost control system. Information, logistics and cash flow are highly integrated, which austere shows its concept of "Quality based on science, Price optimized for customer".



Contents



Introduction

Water cooled water chiller is one of the cooling system in central air conditioner, uses cooling tower to cool the water, and the cold water is cooling source. Water cooled water chiller has advantages of high efficient, low noise, reasonable structure, simple and stable operation, convenient installation and maintenance, which is comfortable central air conditioner that suitable for hotel, shopping mall, office building, exhibition mall, airport, gymnasium.

VWSA series water cooled water chiller is the stable product developed by VICOT with the using of new technologies of international and domestic air conditioning industry, which is designed and produced according to international standard, adopting world famous high quality compressor, system accessories and computerized controller, with the reasonable match and structure design, it's stable, high quality, low noise and no contamination to outdoor environment.

Features



Imported compressor



Structure of heat exchanger

1. Selecting sophisticated parts

Choosing world-renowned brand parts to ensure unit's high-efficient and reliable;

Using the most advanced DAE/DAC high-efficient heat transfer tube. Its multiple spiral ribs and spiral-shaped protrusions improve its heat transfer efficiency; the unique structural design, best copper layout and precise refrigerant control improve its heat transfer efficiency largely.



2. Easy to operate and reliable running

(1) Full computerized control with standby manual operation system;

(2) Multiple protection to ensure safe and reliable running;

(3) High speed embedded microprocessor;

(4) Reserved the terminal for SMS control;

(5) Reserved the terminal for PC monitoring hardware;

(6) Hardware has self-diagnosis function and automatically eliminates its faults. Software uses redundancy and trap technology, which combined with WATCHDOG of hardware can improve unit's capability of anti-jamming;

(7) Advanced touch screen: the lifetime of consecutive touch is more than 1 million times;

(8) The power supply of control system is independent, improving its anti-jamming capability.

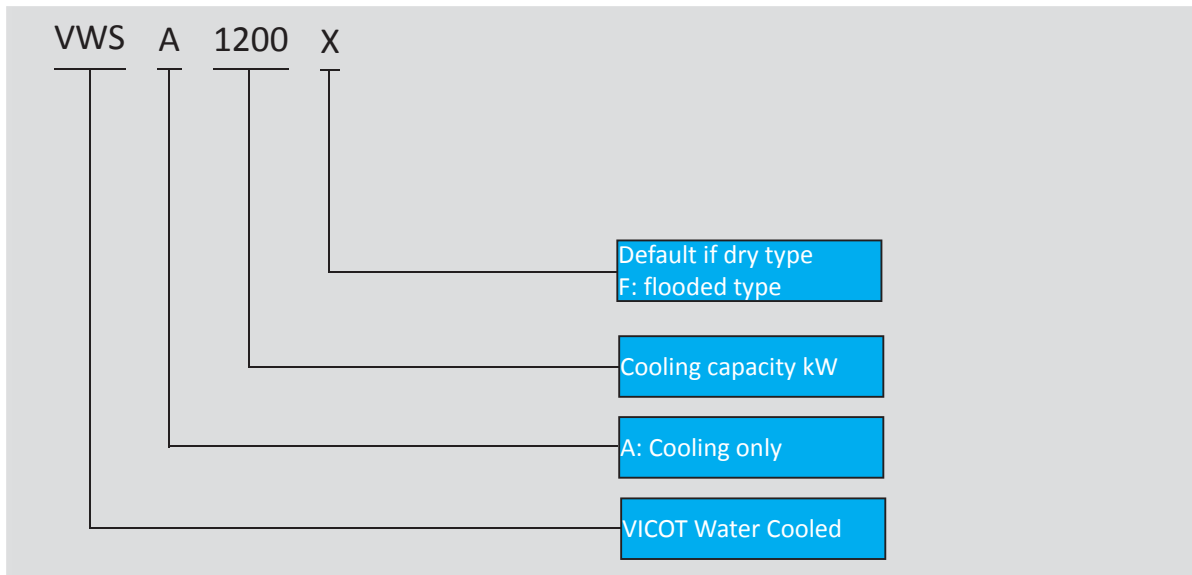
Features



3. High efficiency and energy-saving

Flooded evaporator, inverter, spray and heat recovery technologies improve unit's efficiency greatly. COP>6 and saving 30%-40% running cost for users.

Nomenclature



Optional accessories

Heat recovery	Soft start	Water flow switch
Wooden package	PLC controller	Anti-corrosion
Channel iron base	Remote controller	Rubber absorber
2.0Mpa pressure bearing	Stepless adjustment	Spring shock absorber
Cooling tower	Water pump	

Introduction

Features

Nomenclature

Accessories

Tech. spec.

Variable perf.

Wiring at site

Inst. & maint.

Technical specification

Water Cooled Water Chiller

Specification I - Table 1

Model		VWSA220	VWSA260	VWSA340	VWSA380	VWSA430		VWSA480		VWSA560		VWSA660	
Refrigerant		R22	R22	R22	R22	R22	R134a	R22	R134a	R22	R134a	R22	R134a
Cooling Capacity	kW	220	260	340	380	430	420	480	480	560	560	660	680
Total Power Input	kW	46	53	70	76	88	84	96	95	112	111	132	135
Max. Operating Current	A	108	119	192	196	217	199	246	229	275	266	339	330
Energy Steps		25%~100%											
Refrigerant Circuit	Nos	1											
Compressor Quantity	Nos	1											
Compressor Type		Semi-Hermetic Twin Screw											
Noise(Standard)	dB(A)	65	69	69	71	70	70	70	73	73	73	73	73
Power		380V/3Ph/50Hz*											
Refrigerant Charge Amount	Kg	37	46	40	70	75	80	90	100	105	125	125	140
Chilled Water	Water in/out Temp.	°C	12/7	12/7	12/7	12/7	12/7	12/7	12/7	12/7	12/7	12/7	12/7
	Water Flow	m ³ /h	38	45	59	69	74	72	83	83	96	96	114
	Water Pressure Drop	kPa	50	44	50	50	50	50	50	55	65	85	65
	Water Pipe Connection		DN80	DN80	DN125	DN100	DN125	DN125	DN125	DN125	DN125	DN125	DN125
Cooling Water	Water in/out Temp.	°C	30/35	30/35	30/35	30/35	30/35	30/35	30/35	30/35	30/35	30/35	30/35
	Water Flow	m ³ /h	46	53	70	83	89	87	99	99	116	116	136
	Water Pressure Drop	kPa	55	50	55	55	55	55	55	55	58	58	58
	Water Pipe Connection		DN80	DN80	DN100	DN100	DN125	DN125	DN125	DN125	DN125	DN125	DN150
Partial Heat Recovery (Optional)	Capacity	kW	-	-	-	80	86	84	96	96	112	112	132
	Water Flow	m ³ /h	-	-	-	14	15	15	17	17	19	19	23
	Pressure Drop	kPa	-	-	-	30	32	32	32	32	33	33	34
	Water in/out Temp.	°C	-	-	-	40/45	40/45	40/45	40/45	40/45	40/45	40/45	40/45
Total Heat Recovery (Optional)	Capacity	kW	-	-	-	444	477	464	530	529	619	617	731
	Water Flow	m ³ /h	-	-	-	76	82	80	91	91	106	106	126
	Pressure Drop	kPa	-	-	-	37	38	38	37	37	38	38	38
	Water in/out Temp.	°C	-	-	-	40/45	40/45	40/45	40/45	40/45	40/45	40/45	40/45
Net Weight	Kg	1700	1850	2200	2500	2550	2750	3150	3250	3450	3550	3600	
Operating Weight	Kg	1790	1940	2300	2620	2670	2900	3300	3400	3580	3680	3740	

Note:

1- Water side max. bearing pressure: 1.0MPa.

2- The data above is subject to change without prior notice.

* Various power supply are optional.

Technical specification

Water Cooled Water Chiller

Specification II - Table 2

Model		VWSA760		VWSA900		VWSA960		VWSA1120		VWSA1320		VWSA1520	
Refrigerant		R22	R134a	R22	R134a	R22	R134a	R22	R134a	R22	R134a	R22	R134a
Cooling Capacity	kW	760	780	900	900	960	960	1120	1120	1320	1320	1520	1520
Total Power Input	kW	152	156	180	180	192	192	224	222	264	260	308	300
Max. Operating Current	A	400	367	418	214*2	520	229*2	540	266*2	678	330*2	800	367*2
Energy Steps		25%~100%	25%~100%	25%~100%	12.5%~100%	25%~100%	12.5%~100%	25%~100%	12.5%~100%	12.5%~100%			
Refrigerant Circuit	Nos	1	1	1	2	1	2	1	2	2	2	2	2
Compressor Quantity	Nos	1	1	1	2	1	2	1	2	2	2	2	2
Compressor Type		Semi-Hermetic Twin Screw											
Noise(Standard)	dB(A)	73	73	75	76	75	76	74	74	74	74	74	74
Power		380V/3Ph/50Hz [*]											
Refrigerant Charge Amount	Kg	140	160	170	180	180	190	210	230	255	275	280	310
Chilled Water	Water in/out Temp.	°C	12/7	12/7	12/7	12/7	12/7	12/7	12/7	12/7	12/7	12/7	12/7
	Water Flow	m ³ /h	131	134	155	155	165	165	193	193	227	227	262
	Water Pressure Drop	kPa	55	85	50	50	55	50	55	50	55	55	60
	Water Pipe Connection		DN150	DN150	DN150	DN150	DN200	DN200	DN200	DN200	DN200	DN200	DN200
Cooling Water	Water in/out Temp.	°C	30/35	30/35	30/35	30/35	30/35	30/35	30/35	30/35	30/35	30/35	30/35
	Water Flow	m ³ /h	157	161	186	186	198	198	231	231	273	273	315
	Water Pressure Drop	kPa	58	58	60	60	60	60	60	60	60	65	65
	Water Pipe Connection		DN150	DN150	DN150	2*DN125	DN200	2*DN125	DN200	2*DN125	2*DN125	2*DN125	2*DN150
Partial Heat Recovery (Optional)	Capacity	kW	152	156	180	180	192	192	224	224	264	264	304
	Water Flow	m ³ /h	26	27	31	31	33	33	39	39	45	45	52
	Pressure Drop	kPa	34	34	34	34	32	32	32	32	33	33	34
	Water in/out Temp.	°C	40/45	40/45	40/45	40/45	40/45	40/45	40/45	40/45	40/45	40/45	40/45
Total Heat Recovery (Optional)	Capacity	kW	841	861	995	994	1062	1058	1238	1235	1463	1463	1682
	Water Flow	m ³ /h	145	148	171	171	183	182	213	213	252	252	289
	Pressure Drop	kPa	38	38	39	39	37	37	39	39	39	39	38
	Water in/out Temp.	°C	40/45	40/45	40/45	40/45	40/45	40/45	40/45	40/45	40/45	40/45	40/45
Net Weight	Kg	3800	3900	3890	4300	4650	4800	5400	5500	6400	6400	8000	
Operating Weight	Kg	3950	4100	4020	4450	4830	4950	5610	5700	6650	6650	8320	

Note:

- 1- Water side max. bearing pressure: 1.0MPa.
 - 2- The data above is subject to change without prior notice.
- * Various power supply are optional.

Introduction

Features

Nomenclature

Accessories

Tech. spec.

Variable perf.

Wiring at site

Inst. & maint.

Technical specification

Water Cooled Water Chiller

Specification III - Table 3

Model		VWSA1660	VWSA1800	VWSA1920	VWSA2080	VWSA2240	VWSA2480	VWSA2720	VWSA3100	
Refrigerant		R22	R22	R22	R22	R22	R22	R22	R22	
Cooling Capacity	kW	1660	1800	1920	2080	2240	2480	2720	3100	
Total Power Input	kW	336	362	388	420	459	498	548	624	
Max. Operating Current	A	418*2	418*2	520*2	520*2	590*2	407*3	416*3	444*3	
Energy Steps		12.5%-100%					8.3%-100%			
Refrigerant Circuit	Nos	2					3			
Compressor Quantity	Nos	2					3			
Compressor Type		Semi-Hermetic Twin Screw								
Noise(Standard)	dB(A)	79	80	80	81	81	81	83	83	
Power		380V/3Ph/50Hz*								
Refrigerant Charge Amount	Kg	300	340	360	380	420	465	510	550	
Chilled Water	Water in/out Temp.	°C	12/7	12/7	12/7	12/7	12/7	12/7	12/7	
	Water Flow	m ³ /h	250	305	345	370	400	438	480	
	Water Pressure Drop	kPa	53	53	53	55	55	60	60	
	Water Pipe Connection		DN200	DN200	DN250	DN250	DN250	DN250 + DN200		
Cooling Water	Water in/out Temp.	°C	30/35	30/35	30/35	30/35	30/35	30/35	30/35	
	Water Flow	m ³ /h	342	372	397	428	462	511	562	
	Water Pressure Drop	kPa	60	60	60	65	65	65	65	
	Water Pipe Connection		2*DN150	2*DN150	2*DN200	2*DN200	2*DN200	3*DN200	3*DN200	
Partial Heat Recovery (Optional)	Capacity	kW	332	360	384	416	448	496	544	
	Water Flow	m ³ /h	57	62	66	72	77	85	94	
	Pressure Drop	kPa	35	35	35	35	35	35	35	
	Water in/out Temp.	°C	40/45	40/45	40/45	40/45	40/45	40/45	40/45	
Total Heat Recovery (Optional)	Capacity	kW	1836	1989	2123	2300	2483	2740	3007	
	Water Flow	m ³ /h	316	342	365	396	427	471	517	
	Pressure Drop	kPa	39	39	39	39	39	39	39	
	Water in/out Temp.	°C	40/45	40/45	40/45	40/45	40/45	40/45	40/45	
Net Weight	Kg	8500	8800	9500	11000	11800	12800	13000	13500	
Operating Weight	Kg	8750	9060	9780	11280	12100	13130	13330	13850	

Note:

- 1- Water side max. bearing pressure: 1.0MPa.
 - 2- The data above is subject to change without prior notice.
- * Various power supply are optional.

Technical specification

Flooded Water Cooled Water Chiller

Specification IV - Table 1

Model		VWSA430F	VWSA480F	VWSA560F	VWSA660F	VWSA760F	VWSA900F	VWSA960F	VWSA1120F
Refrigerant		R22							
Cooling Capacity	kW	430	480	560	660	760	900	960	1120
Total Power Input	kW	81	90	103	120	140	165	180	205
Max. Operating Current	A	208	217	245	315	335	378	416	444
Energy adjustment range		25%~100%							
Refrigerant Circuit	Nos	1							
Compressor Quantity	Nos	1							
Compressor Type		Semi-Hermetic Twin Screw							
Noise(Standard)	dB(A)	65	65	70	75	75	75	75	75
Power		380V/3Ph/50Hz							
Refrigerant Charge Amount	kg	150	180	230	260	300	330	370	400
Chilled Water	Water in/out Temp.	°C	12/7	12/7	12/7	12/7	12/7	12/7	12/7
	Water Flow	m ³ /h	74	83	96	114	131	155	165
	Water Pressure Drop	kPa	55	55	55	60	60	60	60
	Water Pipe Connection		DN125	DN125	DN125	DN125	DN150	DN150	DN200
Cooling Water	Water in/out Temp.	°C	30/35	30/35	30/35	30/35	30/35	30/35	30/35
	Water Flow	m ³ /h	88	98	114	134	155	183	196
	Water Pressure Drop	kPa	60	60	65	65	60	65	65
	Water Pipe Connection		DN125	DN125	DN125	DN150	DN150	DN150	DN200
Net Weight	kg	2800	3000	3500	4000	4500	5000	5700	5700
Operating Weight	kg	3000	3300	3700	4200	4700	5300	6000	6000

Note:

- 1- Water side max. bearing pressure: 1.0MPa.
- 2- The data above is subject to change without prior notice.

Introduction

Features

Nomenclature

Accessories

Tech. spec.

Variable perf.

Wiring at site

Inst. & maint.

Technical specification

Flooded Water Cooled Water Chiller

Specification V - Table 2

Model		VWSA1320F	VWSA1520F	VWSA1660F	VWSA1800F	VWSA1920F	VWSA2080F	VWSA2240F
Refrigerant		R22						
Cooling Capacity	kW	1320	1520	1660	1800	1920	2080	2240
Total Power Input	kW	240	280	308	335	335	385	415
Max. Operating Current	A	315*2	335*2	378*2	378+416	416*2	416+444	444*2
Energy adjustment range		12.5%~100%						
Refrigerant Circuit	Nos	2						
Compressor Quantity	Nos	2						
Compressor Type		Semi-Hermetic Twin Screw						
Noise(Standard)	dB(A)	70	70	75	78	80	80	80
Power		380V/3Ph/50Hz						
Refrigerant Charge Amount	kg	480	550	600	700	780	840	900
Chilled Water	Water in/out Temp.	°C	12/7	12/7	12/7	12/7	12/7	12/7
	Water Flow	m ³ /h	227	262	286	310	331	358
	Water Pressure Drop	kPa	60	60	60	65	65	67
	Water Pipe Connection		DN200	DN200	DN200	DN250	DN250	DN250
Cooling Water	Water in/out Temp.	°C	30/35	30/35	30/35	30/35	30/35	30/35
	Water Flow	m ³ /h	269	310	339	368	392	425
	Water Pressure Drop	kPa	65	60	65	65	66	68
	Water Pipe Connection		DN200	DN200	DN200	DN250	DN250	DN250
Net Weight	kg	7200	7800	8200	8700	9000	9600	10000
Operating Weight	kg	7500	8100	8500	9100	9500	10000	10500

Note:

- 1- Water side max. bearing pressure: 1.0MPa.
- 2- The data above is subject to change without prior notice.

Variable performance

Introduction

Features

Nomenclature

Accessories

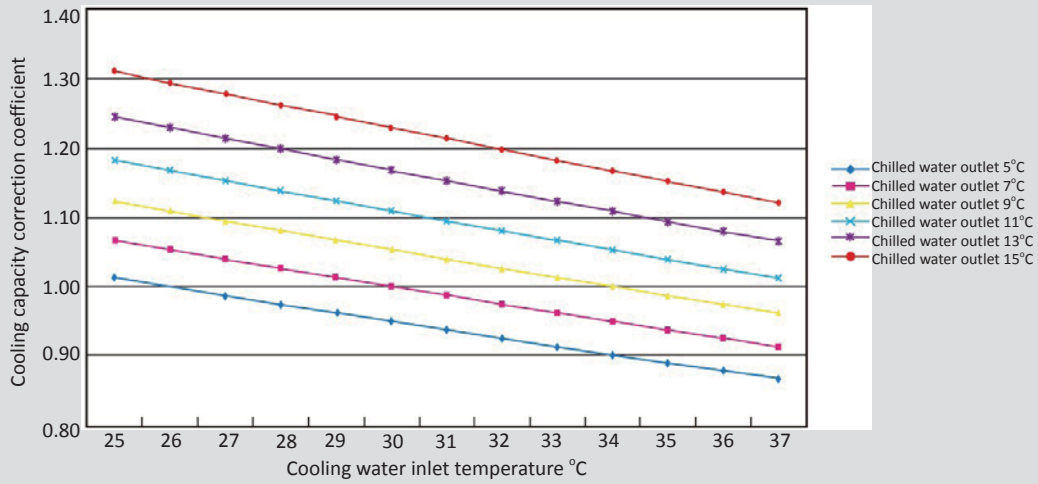
Tech. spec.

Variable perf.

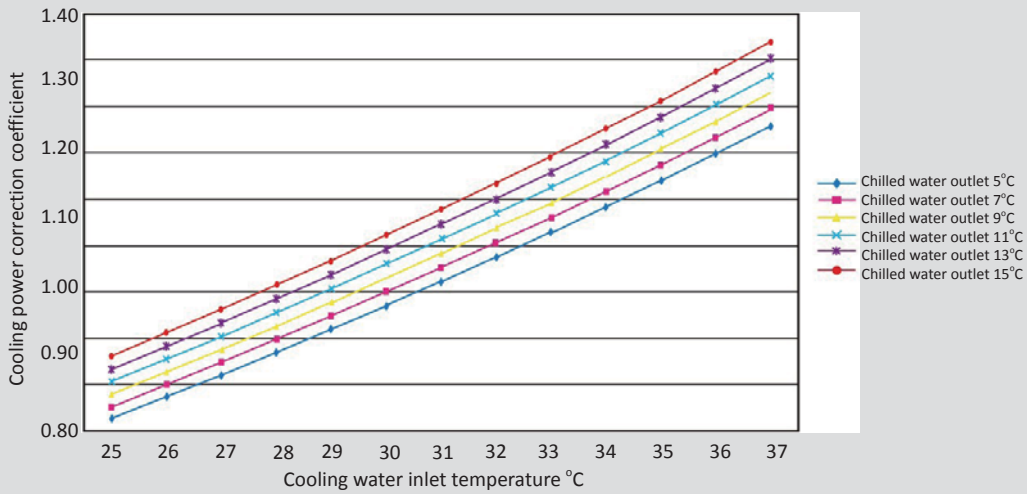
Wiring at site

Inst. & maint.

Cooling Capacity Correction Coefficient

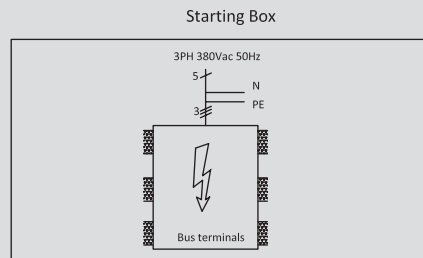
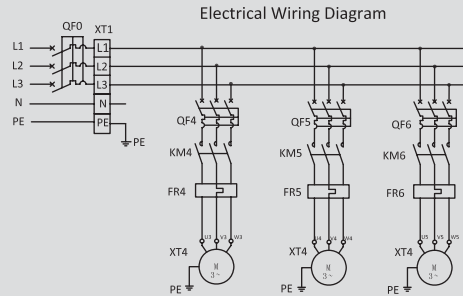
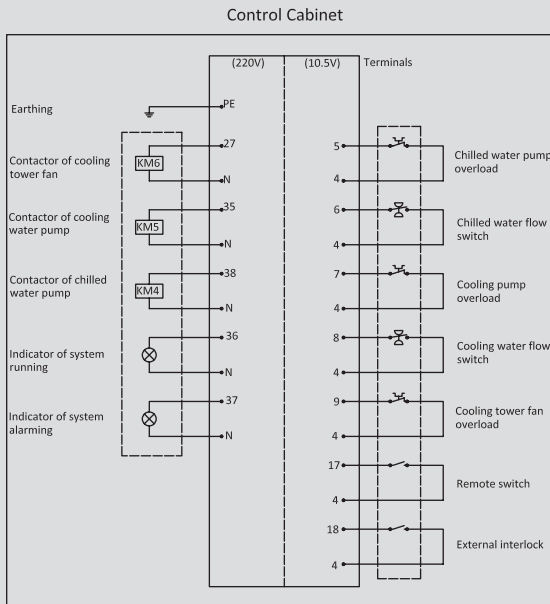


Cooling Power Correction Coefficient

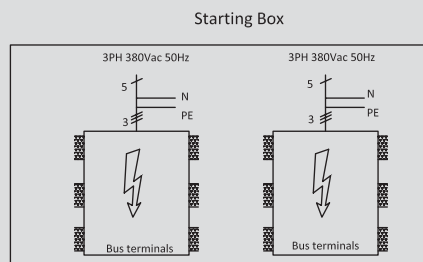
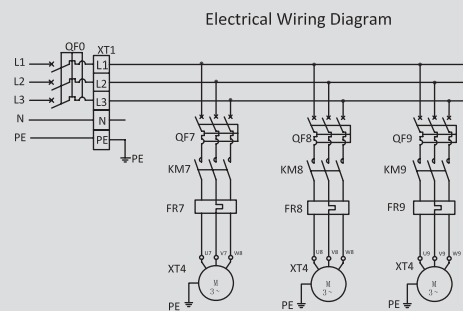
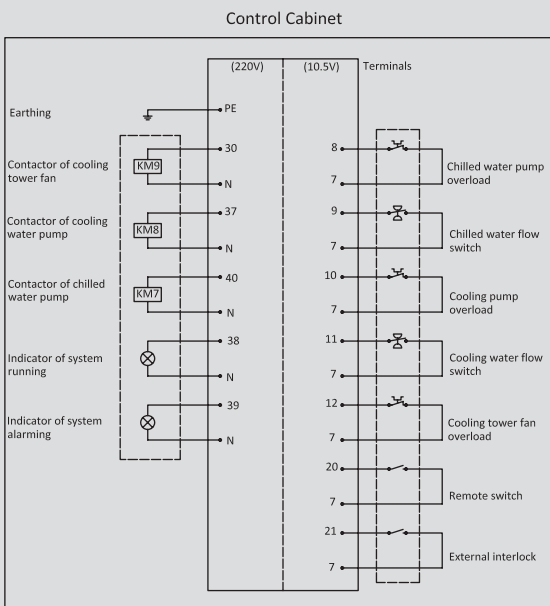


Wirings at Site

Single Refrigerant Circuit Unit



Double Refrigerant Circuit Unit



Installation & maintenance

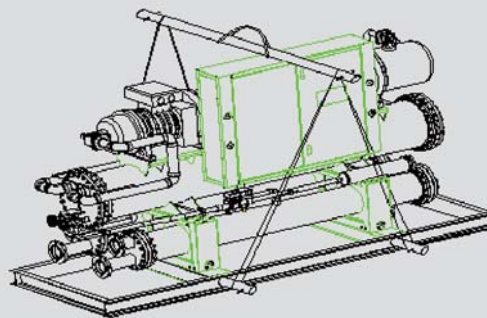
• Machine room requirements

1. For a convenient operation and maintenance, there should be at least leave 1-1.5m space in front of the operation side, and enough space allow easy movement of people in other sides.
2. Good ventilation environment should be ensured in the operation room, the room temp will be increased as the environment temp is lower than the temperature of compressor gas discharge end and gas discharge pipe, and the machine room temperature should not beyond 35°C.
3. The operation room should be sound insulated according to specific situation so as to avoid the operation noise disturbs environment surrounding. It is better that main machine and pump not installed in the same room.

• Lifting

Handle the machine carefully during lifting to avoid damage, especially no damage to compressor, control system, piping system etc.. Soft material should be used at the point of touching between the lifting rope and the unit. And to decrease the pressure on the unit, supporter bar between the rope and the unit is necessary for heavy unit. Crane can be applied during the handling, the lifting rope and the unit should be connected firmly, the unit should be horizontal without slope, and no rope touch on heat exchanger side, panel and the top of machine.

Hoisting Graph



• Installation

To guarantee sound quality and perfect performance, each unit has been strictly tested before leaving factory. Great care should be required during handling and installation, no any damage on control system or on pipes is allowed.

1. Before open the package, move the unit to the installation site as close as possible and pay attention on keeping the unit to be vertical.
2. During the installation, the sling bearing capacity should be 3 times of the unit's weight, and no people under the suspending unit are allowed. Please refer to rating label for unit weight.
3. Must have horizontal level calibration after the unit is on the foundation and the horizontal deviation should be within 0.02%.

Installation & maintenance

4. The direction of the water pipe connected with the unit should be in line with the specification and the pipeline diameter should not be too small. Water flow switch should be equipped on the pipeline and connected with the compressor.

5. Temperature and pressure indicators should be equipped at both inlets and outlets of the chilled water pipe and cooling pipe for the convenient monitoring on the unit's operation condition.

6. Power capacity provided should be big enough, power supply voltage fluctuation should be within $\pm 10\%$, the earthing should be well done.

• Water system and piping

1. The installation should in line with the national and local authorities' requirement.

2. Chilled water pipe must be insulated to avoid capacity loss and having condensed water.

3. For the sake of water quality, filter on input pipe is necessary.

4. Dimension of the joint of connection pipe should meet requirement (refer to Technical data)

5. For the sake of automatically discharge air, supply water indirectly and expanding or shrinking of chilled water system, expansion tank is required. And it should 1.5m higher than the highest point of the water system. No valve is allowed in the pipe between the expansion tank and return water system.

6. The air discharge valve should be fixed the highest point of the chilled water system. After connection of the chilled water system finished, and pressure testing is acceptable, open the air discharge valve to exhaust the air in chilled water and close the valve after completely air exhausted. If the water or the pipe inside is not clean, it needs to clean the filter after half an hour's pump operation.

7. Before the first running of the circulation water, close the input/output valve first, then open the bypass valve, run the water pump only to circulate the water in pipe to clean the pipe and clean the filter after that, then add clean water again to the system, then turn on the inlet/outlet valve and close the bypass valve for normal operation.

8. Water segregator, water collector and water pressure balance valve are required when several units to be parallelized.

9. Water drain valve should be fixed at the lowest point of the water system.

10. The design of water piping, please refer to the Air conditioning Design Manual, and the project operation and inspection refer to GB50243-1997 Ventilation & air conditioning project operation and inspection Norms.

• Power connection

1. Wire selection and connection should be carried out strictly according to requirement.

2. Should have earthing well done, no earthing to gas pipe, water pipe, telephone line, to avoid electric shock cause by bad earthing.

3. Ensure the phase sequence is correct, to avoid not running.

Installation & maintenance

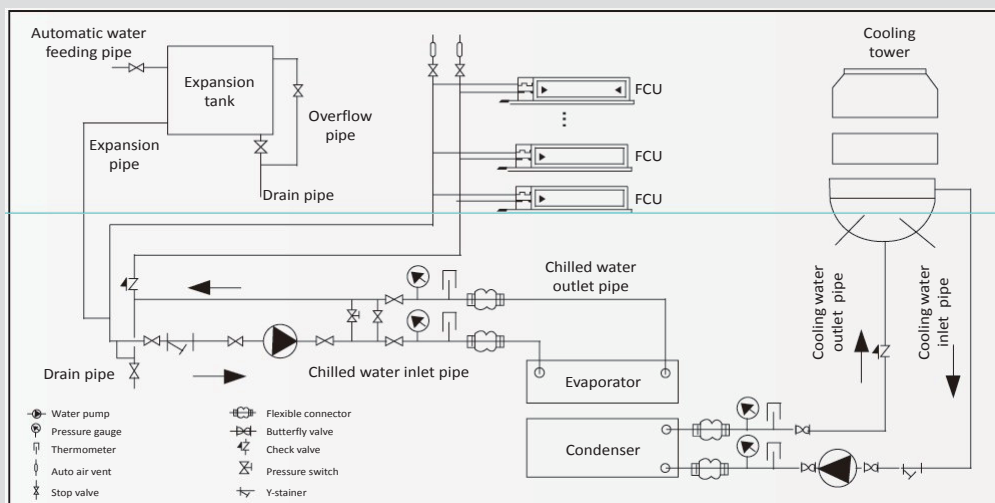
• Maintenance

1. The qualified technician is required for the maintenance; all the protection devices and controller must be checked before restart.
2. Regular and correct maintenance is required for stability and good performance. Chilled and cooling water must be complete drained when long time no use to avoid possible freezing.

• Notice

1. Antifreezer should be added in chilled water if water temp. set below zero or near zero.
2. Clean water system regularly.
3. Pay attention to antifreeze when ambient temp. is around 0°C in winter.
4. Antifreezer or other antifreeze measure must be used in bad ambient (under 0°C outdoor).

• Appendix : water system diagram



The Same Breath, Energy Saving Together.

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