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MODULAR WATER-COOLED CHILLER(HEAT PUMP)

TICA CENTRAL AIR-CONDITIONING

4008-601-601

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TICA reserves the right to make changes without notice.

FORM NO. A5715G01

环保



誠信者，天下之結也

光阴荏苒，岁月如诗。

南京天加空调设备有限公司始终专注于中央空调的制造与销售，以专业的品质为人们创造舒适环境。

天加已成为中央空调行业中成长最迅速、发展最具活力的国际化企业之一。

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For the medium and small building places

Recommended TICA Environment friendly water cooled module TWS series

Designed for User



High efficient and energy saving

- The EER of machine unit can reach up to 4.78, and if with partial load, the EER will be higher, thus the users cost can be lowered.
- Modularized operations and multi-stage starting make energy saving more significant.



Healthy and comfortable

- Machine unit adopts international well-known hermetic scroll compressor, run in quietness and small vibration.
- The machine unit can rapidly and precisely meet all users' requirements by excellent control and performance of compressor.



Stable and reliable

- Machine unit adopts modularized operation and multi-stage starting mode, and has little impact on grid.
- Machine unit itself has lots of protection function and runs in safety without defects.
- Long designed service life, one-time investment and long-term use.



Flexible and agility

- Clients can make investment and installation step by step according to the project: the structure designing is compact, does not need special machine room and can be installed on the rooftop or balcony.
- Maintenance is convenient with modularization combination, and the maintenance of single module will not affect the running of other machine units.
- Centralized control can be achieved and is easy for daily management. Human friendly interface can meet diverse requirements of users.

For designing institute and project, products have...

Green environment protection

- Refrigerant is green environment friendly HFC-410A, which has no damage to ozone layer of atmosphere and has no banned term, and gains great favor of the designers who advocate green environment protection.
- Chilling performance is outstanding, save electric power consumption, and reduce CO2 emission.



Convenient model selection

- There are total 5 basic unit modules of 20RT, 30RT, 40RT, 50RT, 60RT, arbitrary match of master and slave machines among 20RT, 30RT or 40RT, 50RT, 60RT can be made. And maximum 8 cooling modules can be combined. The interval between every 2 grades is 10RT from 20RT to 480RT. Heat pump unit have 20RT and 30RT, maximum 8 heat pump units can be combined which capacity can be from 20RT to 240 RT.



Easy transportation

- By modular design, transportation can be fulfilled by electric elevator or fork lift.
- Require no professional lifting equipment, thus the lifting charge and labor cost are reduced.



Construction is convenient

- Machine unit can be transported separately and installed assembly. Multiple sets of machine units can make options and be installed with water circuit manifold. The installation construction is convenient and easy and the construction period is shortened.



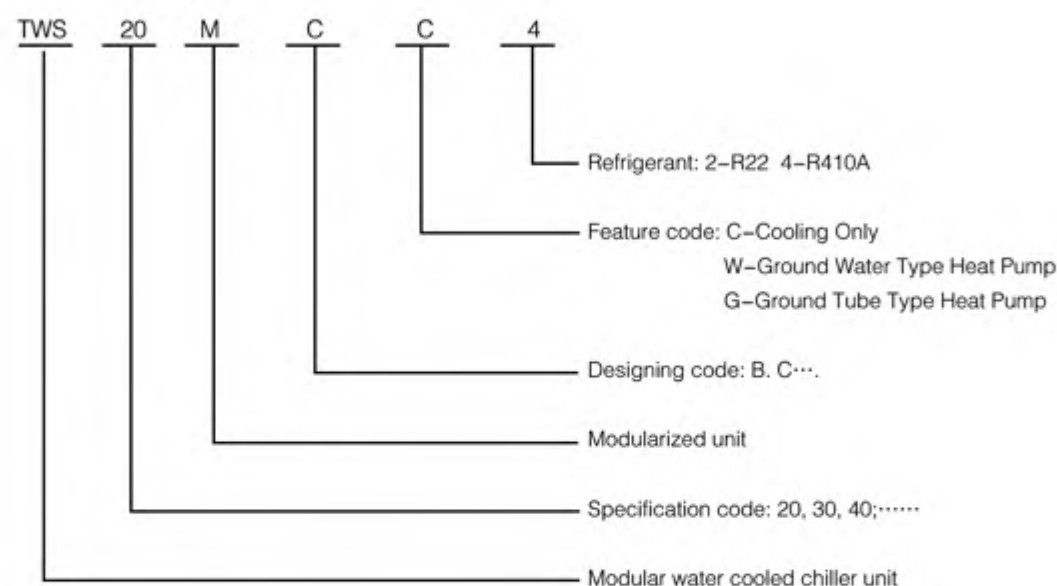
Overview

TICA new series R410A modular water cooled chiller is an environment friendly, high efficient and energy saving product. This machine unit employs advanced technologies and experience of industry, adopts reinforced heat transmission technology and improves the machine unit EER. Simultaneously considering the earthly environment and economic effect, central air conditioner is used as the preferred product for chilling supply or process cooling. It is a complete new generation of environment friendly high efficient scroll water chiller unit which TICA has devotedly developed, and it not only has broad scope of chilling volume and has low running cost, but also is very environment friendly.

This series of machine units adopt advanced entire hermetic scroll type compressor and high efficient compact heat exchanger, combined with advanced electric circuit control technique and modularized chilling regulation technique, which makes the machine unit not only have advantages of high total EER and significant energy saving, stable and reliable system and others, but also make the users lower preliminary investment and save running cost.

This product has wide distribution of chilling capacity, smaller chilling load can select single modular operation, and bigger chilling load can select several modular (maximum 8) for combination operation. There are 2 combination series: 20,30 RT combination and 40, 50, 60 RT combination. The installation is simple; the structure is concise and compact, with low noise and low maintenance cost, and small land occupation. It can be widely used in luxury villas, hotels, hospitals, office buildings, entertainment places, restaurants, schools and industrial refrigerating fields, etc. R22 series can select maximum 4 modular for combination operation.

Model description



Unit performance features

High efficient and energy saving

Compressor

Adopt international well-known brand scroll compressor, clearance volume is small, friction loss is small, running efficiency is high; combined with the application of parallel compressors technology, each modular unit employs 2-3 sets of scroll compressors for working, and can provide multi-stage volume capacity adjusting. The energy efficiency is excellent while working with partial load.



Condenser and evaporator

High efficient shell and tube type heat exchanger is adopted, and high efficient copper tubes are provided internally to improve heat exchanging capacity; heat exchanging area is properly enlarged, and heat transmission temperature difference is effectively reduced, and machine unit COP value is improved; the bottom of condenser has supercooled section which effectively raised refrigerant supercooled degree; modernized manufacturing procedure and process ensures the container is clean and has no impurities, thus the heat exchanging efficiency is raised; heat exchanger has undertaken strict flaw detecting test and pressure test, which is ensured to be safe and reliable.

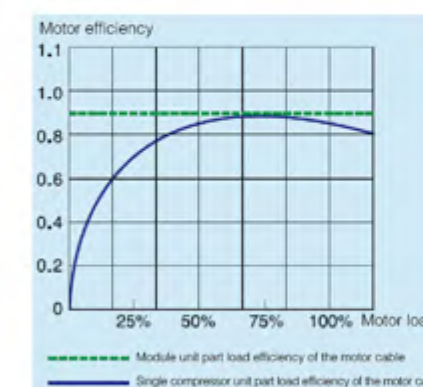
Refrigerating fittings

Expansion valve, filters, and various kinds of safety protection control components all adopt international well-known brand products with reliable performance, and are ensured to be working high efficiency in long-term

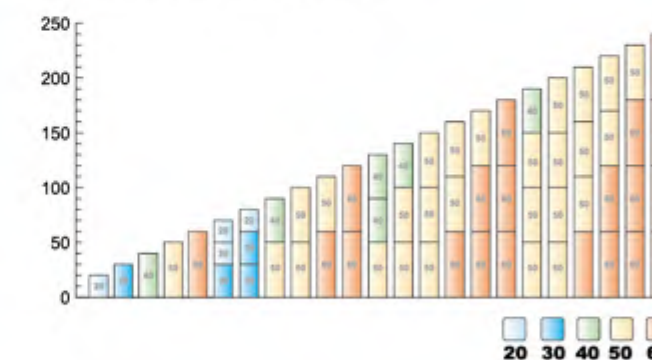


Modularized combination style makes machine unit more energy-saving.

Every basic module have 2 or 3 stage capacity output . The system could achieve more stages by module combination, Keep the system running under high efficiency, avoid the weak point of low motor efficiency under low load for single compressor model



Recommended assembly method



Reliable performance

Reliable operation

Modularized structure and by stage starting of machine unit have reduced grid impact caused by starting currency; intelligently realized the equilibrium running of compressor and improved total service life of machine unit; the start/stop of any single module unit defective compressor will not affect the normal running of other machine units; there is no interference between the modular units; the standby property is very high.



Multiple protection functions

The stability of equipment is important for industrial and commercial places. TICA environment friendly modularized water cooled chiller unit is subject to multiple working conditions and long term test which is stricter than internal requirements and the test results are all superior to international standard. Multiple controls are provided within the machine unit to ensure the normal running. The service life is longer, and operation is safer.

- Phase sequential protection
- Avoid the frequent starting of compressor
- Compressor overloading protection
- Air discharging temperature control protection
- High and low Pressure protection
- Anti-cutoff protection
- Automatic frozen proof function
- Automatic alarm and partial automatic fault resetting function
- Automatic increase/decrease loading function
- Powerful external interlock function



Running in low noise

The machine unit has excellent configurations and optimized structure designing, which has made comparison, selection and improvement for the components and has made noise reducing designing for structure and pipelines; through precision noise room test, the machine can run in low noise.

- High performance international well-known brand hermetic scroll compressor has little vibration;
- Compressor is installed with flexible base plate which can maximally lower the running vibration;
- Air suction/discharge pipes have optimized designing which lowers the vibration transmitted to machine unit.

Intelligent control

The machine unit is provided with human friendly operation interface to meet diverse operational requirements of users. The machine unit adopts micro computer monitoring to realize multi-functions of temperature control, protection function, timing set, memory, state display, warning display, temperature set as well as group control, etc. Users can make use of the control switch of this machine unit itself to make control, and can realize remote control through connecting external switch.



Machine unit warning And protection function

- 14 protections and fault protection
- Press key lock
- Password protection parameter set

Parameter set function

- Real time set
- Timing power on/off set
- Refrigerating inlet water temperature set

Basic running operation

- Refrigerating working mode

Other functions

- Historic fault query
- Remote control on/off
- Battery supported real time clock running

Intelligent control signal output function

- Cooling water pump control output
- Chilling water pump control output

Parameter display function

- Running condition query
- Compressor running display
- Chilling water temperature display
- Water pump running display
- Frozen proof display
- Communication indication
- Polychrome backlight display
- Fault code display

Modular unit Performance data

General Data

Model TWS – MCC4	Cooling Capacity KW	Power Input KW	Compressor Qty	Energy control	Shell and Tube Evaporator				Shell and Tube Condenser			
					Water Pipe	Water Flow Rate m³/h	Water Pressure Drop KPa	Connection	Water Pipe	Water Flow Rate m³/h	Water Pressure Drop KPa	Connection
20	70.2	14.8	2	0–100% 2steps	DN65	12.1	19	Flexible Hoop	DN65	14.6	22	Flexible Hoop
30	107.2	22.6	3	0–100% 3steps	DN65	18.4	23		DN65	22.3	35	
40	146.4	30.6	2	0–100% 2steps	DN80	25.2	33		DN80	30.4	22	
50	186.7	39.2	2	0–100% 2steps	DN80	32.0	39		DN80	38.7	27	
60	230.0	48.3	2	0–100% 2steps	DN100	39.5	46		DN100	47.7	33	

Model TWS – MCC4	The Maximum Operating Current A	The Minimum Power KW	Dimension			Refrigerant				Lubricating oil	Weight	
			Length mm	Width mm	Height mm	Model	System	Control Method	Charge Mass kg		Shipping Weight kg	Operation Weight kg
20	60	21.9	1940	530	1490	R410A	1	Thermal expansion valve	14	POE	600	620
30	90	32.8	1940	550	1490		2		17	POE	780	810
40	106	42.8	2320	740	1720		2		22	PVE	1150	1190
50	132	54.5	2320	740	1720		2		28	PVE	1210	1250
60	162	67.7	2320	740	1720		2		36	PVE	1270	1320

Model TWS – MCC2	Cooling Capacity KW	Power Input KW	Compressor Qty	Energy control	Shell and Tube Evaporator				Shell and Tube Condenser			
					Water Pipe	Water Flow Rate m³/h	Water Pressure Drop KPa	Connection	Water Pipe	Water Flow Rate m³/h	Water Pressure Drop KPa	Connection
20	69.6	13.9	2	0–100% 2steps	DN65	12.0	13	Flexible Hoop	DN65	14.4	21	Flexible Hoop
30	107.1	21.5	3	0–100% 3steps	DN65	18.4	21		DN65	22.1	39	

Model TWS – MCC2	The Maximum Operating Current A	The Minimum Power KW	Dimension			Refrigerant				Lubricating oil	Weight	
			Length mm	Width mm	Height mm	Model	System	Control Method	Charge Mass kg		Shipping Weight kg	Operation Weight kg
20	54	20.0	1940	540	1550	R22	1	Thermal expansion valve	14	160 P	545	565
30	81	31	1940	590	1550	R22	2		17	160 P	700	720

Note:

- Unit Nominal Condition : 12°C entering and 7°C leaving chilled water temperature , 30°C entering and 35°C leaving cooling water temperature
- Power: 380V/50Hz, promised power fluctuate range : ± 10%
- If there is special requirement please contact TICA staff for any products.
- TICA reserve the right to make changes to the above specifications without prior notice.

Model TWS– MCW4	Cooling Capacity kW	Heating Capacity kW	Cooling Power Input kW	Heating Power Input kW	Compressor Qty.	Energy Control	CW/HW Exchanger				Ground Water Exchanger			
							Water Pipe	Water Flow Rate m³/h	Water Pressure Drop kPa	Connection	Water Pipe	Water Flow Rate m³/h	Water Pressure Drop kPa	Connection
20	76.9	83.8	13.4	18.6	2	0–100% 2 steps	DN65	13.2	13	Flexible Hoop	DN65	7.0	10	Flexible Hoop
30	120.1	130.8	20.4	28.3	3	0–100% 3 steps	DN65	20.6	24		DN65	11.0	15	
Model TWS– MCW4	Compressor Type	Start Method	Max. Operating Current A	Dimension			Refrigerant				Lubricating oil	Weight kg		
				Length mm	Width mm	Height mm	Type	System	Control Method	Charge Mass kg		Shipping Weight kg	Operating Weight kg	
20	Totally Enclosed Scroll Compressor	Direct Start	60	1940	530	1490	R410A	1	Thermal Expansion Valve	14	POE	600	620	
30			90	1940	550	1490		2		17		780	810	

Note:

- Unit nominal condition: Cooling: 12°C entering and 7 °C leaving chilled water temperature, 18°C entering and 29 °C leaving ground tube water temperature. Heating: 45 °C leaving water temperature, 10°C entering ground tube water temperature.
- Power supply: 380V 3N–50Hz, promised power fluctuate range ± 10%.
- If there is special requirement please contact TICA staff for ant products.
- TICA reserve the right to make changes to above specifications without prior notice.

Model TWS– MCG4	Cooling Capacity kW	Heating Capacity kW	Cooling Power Input kW	Heating Power Input kW	Compressor Qty.	Energy Control	CW/HW Exchanger				Ground Water Exchanger			
							Water Pipe	Water Flow Rate m³/h	Water Pressure Drop kPa	Connection	Water Pipe	Water Flow Rate m³/h	Water Pressure Drop kPa	Connection
20	71.7	82	13.4	18.0	2	0–100% 2 steps	DN65	12.3	13	Flexible Hoop	DN65	15.4	22	Flexible Hoop
30	119.9	125	20.3	27.6	3	0–100% 3 steps	DN65	20.6	24		DN65	24.1	35	
Model TWS– MCG4	Compressor Type	Start Method	Max. Operating Current A	Dimension			Refrigerant				Lubricating oil	Weight kg		
				Length mm	Width mm	Height mm	Type	System	Control Method	Charge Mass kg		Shipping Weight kg	Operating Weight kg	
20	Totally Enclosed Scroll Compressor	Direct Start	60	1940	530	1490	R410A	1	Thermal Expansion Valve	14	POE	600	620	
30			90	1940	550	1490		2		17		780	810	

Note:

- Unit nominal condition: Cooling: 12°C entering and 7 °C leaving chilled water temperature, 25°C entering and 30 °C leaving ground tube water temperature. Heating: 45 °C leaving water temperature, 10°C entering ground tube water temperature.
- If the leaving ground tube water is below 3 °C, please charge the glycol liquid.
- Power supply: 380V 3N–50Hz, promised power fluctuate range ± 10%.
- If there is special requirement please contact TICA staff for ant products.
- TICA reserve the right to make changes to above specifications without prior notice.

Recommended density of glycol liquid

Leaving water temperature°C	3 ~ 0	0 ~ -5	-5 ~ -10
Recommended mass concentration %	20	25	35

Model TWS– MCW2	Cooling Capacity kW	Heating Capacity kW	Cooling Power Input kW	Heating Power Input kW	Compressor Qty.	Energy Control	CW/HW Exchanger				Ground Water Exchanger			
							Water Pipe	Water Flow Rate m³/h	Water Pressure Drop kPa	Connection	Water Pipe	Water Flow Rate m³/h	Water Pressure Drop kPa	Connection
20	76.8	83.7	13.3	17.5	2	0–100% 2 steps	DN65	13.2	13	Flexible Hoop	DN65	7.0	10	Flexible Hoop
30	120.0	130.7	20.3	26.8	3	0–100% 3 steps	DN65	20.6	22		DN65	11.0	18	
Model TWS– MCW2	Compressor Type	Start Method	Max. Operating Current A	Min. Power kW	Dimension			Refrigerant				Weight kg		
					Length mm	Width mm	Height mm	Type	System	Control Method	Charge Mass kg	Lubricating oil	Shipping Weight kg	Operating Weight kg
20	Totally Enclosed Scroll Compressor	Direct Start	54	24	1940	540	1550	R22	1	Thermal Expansion Valve	14	160 P	545	565
30			81	36	1940	590	1550	R22	2		17	160 P	700	720

Note:

- Unit nominal condition: Cooling: 12°C entering and 7 °C leaving chilled water temperature, 18°C entering and 29 °C leaving ground tube water temperature. Heating: 45 °C leaving water temperature, 10°C entering ground tube water temperature.
- Power supply: 380V 3N-50Hz, promised power fluctuate range ± 10%.
- If there is special requirement please contact TICA staff for ant products.
- TICA reserve the right to make changes to above specifications without prior notice.

Model TWS– MCG2	Cooling Capacity kW	Heating Capacity kW	Cooling Power Input kW	Heating Power Input kW	Compressor Qty.	Energy Control	CW/HW Exchanger				Ground Water Exchanger			
							Water Pipe	Water Flow Rate m³/h	Water Pressure Drop kPa	Connection	Water Pipe	Water Flow Rate m³/h	Water Pressure Drop kPa	Connection
20	71.6	82	13.3	17.2	2	0–100% 2 steps	DN65	12.3	13	Flexible Hoop	DN65	15.4	20	Flexible Hoop
30	111.8	125	20.4	26.3	3	0–100% 3 steps	DN65	19.2	23		DN65	24.0	40	
Model TWS– MCG2	Compressor Type	Start Method	Max. Operating Current A	Min. Power kW	Dimension			Refrigerant				Lubricating oil	Weight kg	
					Length mm	Width mm	Height mm	Type	System	Control Method	Charge Mass kg		Shipping Weight kg	Operating Weight kg
20	Totally Enclosed Scroll Compressor	Direct Start	54	24	1940	540	1550	R22	1	Thermal Expansion Valve	14	160P	545	565
30			81	36	1940	590	1550	R22	2		17	160P	700	720

Note:

- Unit nominal condition: Cooling: 12°C entering and 7 °C leaving chilled water temperature, 25°C entering and 30 °C leaving ground tube water temperature. Heating: 45 °C leaving water temperature, 10°C entering ground tube water temperature.
- If the leaving ground tube water is below 3 °C, please charge the glycol liquid.
- Power supply: 380V 3N-50Hz, promised power fluctuate range ± 10%.
- If there is special requirement please contact TICA staff for ant products.
- TICA reserve the right to make changes to above specifications without prior notice.

Correction Factor

Model	Chilled water leaving temperature°C	Cooling water entering temperature°C							
		20		25		30		35	
		Cooling Capacity KW	Power Input KW	Cooling Capacity KW	Power Input KW	Cooling Capacity KW	Power Input KW	Cooling Capacity KW	Power Input KW
TWS-MCC4	5	0.943	0.816	0.907	0.895	0.864	0.979	0.821	1.073
	6	1.048	0.833	1.006	0.92	0.962	0.993	0.916	1.089
	7	1.088	0.838	1.045	0.916	1	1	0.952	1.093
	8	1.126	0.843	1.084	0.921	1.037	1.005	0.988	1.099
	9	1.168	0.846	1.122	0.926	1.074	1.011	1.023	1.104
	10	1.206	0.84	1.16	0.931	1.12	1.017	1.06	1.12

Model	Chilled water leaving temperature°C	Cooling water entering temperature°C							
		20		25		30		35	
		Cooling Capacity KW	Power Input KW	Cooling Capacity KW	Power Input KW	Cooling Capacity KW	Power Input KW	Cooling Capacity KW	Power Input KW
TWS-MCC2	5	0.945	0.818	0.907	0.895	0.866	0.979	0.823	1.073
	6	1.048	0.832	1.007	0.910	0.963	0.994	0.916	1.088
	7	1.088	0.837	1.045	0.916	1.000	1.000	0.952	1.093
	8	1.127	0.841	1.084	0.921	1.037	1.005	0.987	1.099
	9	1.167	0.846	1.122	0.926	1.074	1.011	1.023	1.104
	10	1.206	0.850	1.160	0.931	1.110	1.016	1.058	1.110

Model	Chilled Water Leaving Temperature °C	Ground water entering temperature °C											
		13		15		18		20		23		25	
		Cooling Capacity kW	Power Input kW	Cooling Capacity kW	Power Input kW	Cooling Capacity kW	Power Input kW	Cooling Capacity kW	Power Input kW	Cooling Capacity kW	Power Input kW	Cooling Capacity kW	Power Input kW
TWS- MCW	5	0.947	0.900	0.938	0.935	0.925	0.987	0.916	1.026	0.903	1.083	0.892	1.104
	6	0.999	0.909	0.985	0.943	0.963	0.994	0.954	1.032	0.939	1.089	0.928	1.111
	7	1.037	0.914	1.022	0.948	1.000	1.000	0.990	1.038	0.974	1.095	0.962	1.117
	8	1.074	0.918	1.059	0.953	1.037	1.006	1.026	1.044	1.009	1.101	0.997	1.123
	9	1.112	0.923	1.097	0.958	1.073	1.011	1.062	1.050	1.044	1.107	1.032	1.129
	10	1.150	0.928	1.134	0.963	1.110	1.017	1.096	1.055	1.080	1.113	1.066	1.135

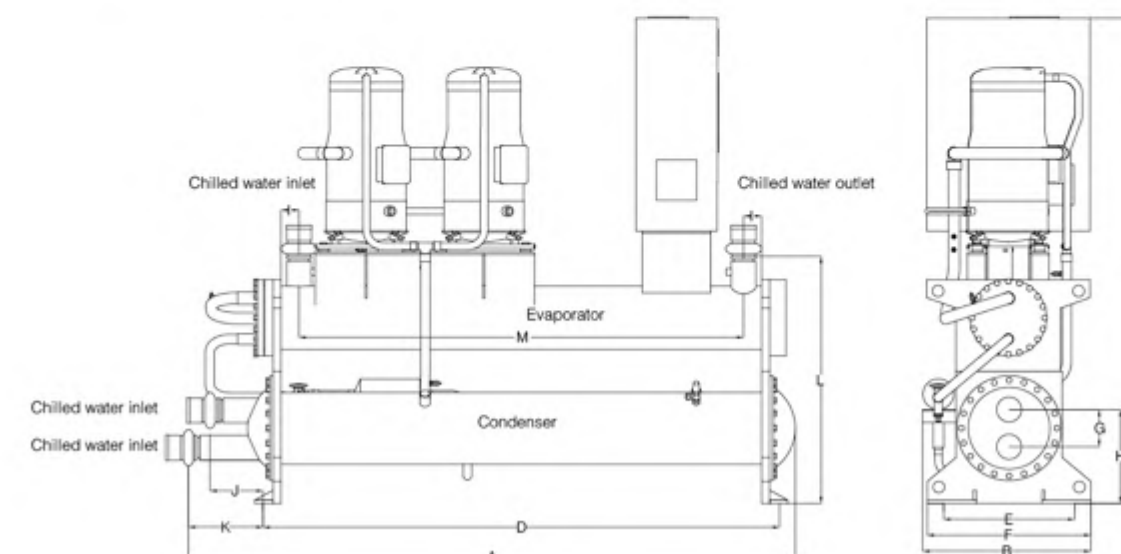
Model	Hot Water Leaving Temperature °C	Ground water entering temperature °C											
		13		14		15		16		17		18	
		Cooling Capacity kW	Power Input kW	Cooling Capacity kW	Power Input kW	Cooling Capacity kW	Power Input kW	Cooling Capacity kW	Power Input kW	Cooling Capacity kW	Power Input kW	Cooling Capacity kW	Power Input kW
TWS-MCW	40	0.948	0.877	0.976	0.880	1.004	0.882	1.034	0.884	1.063	0.887	1.094	0.889
	43	0.947	0.934	0.974	0.937	1.002	0.939	1.031	0.941	1.060	0.944	1.090	0.946
	46	0.945	0.995	0.972	0.998	1.000	1.000	1.028	1.002	1.057	1.005	1.087	1.007
	48	0.945	1.038	0.971	1.040	0.999	1.043	1.026	1.045	1.055	1.048	1.084	1.050
	50	0.944	1.083	0.970	1.085	0.997	1.088	1.025	1.090	1.053	1.093	1.081	1.095
	55	0.942	1.204	0.967	1.206	0.993	1.209	1.020	1.212	1.047	1.214	1.075	1.217

Model	Chilled Water Leaving Temperature °C	Ground tube water entering temperature °C													
		10		15		20		25		30		35		40	
		Cooling Capacity kW	Power Input kW	Cooling Capacity kW	Power Input kW	Cooling Capacity kW	Power Input kW	Cooling Capacity kW	Power Input kW	Cooling Capacity kW	Power Input kW	Cooling Capacity kW	Power Input kW	Cooling Capacity kW	Power Input kW
TWS-MCG	5	0.975	0.755	0.969	0.818	0.951	0.897	0.932	0.993	0.908	1.101	0.881	1.222	0.804	1.375
	6	1.011	0.758	1.005	0.821	0.986	0.900	0.966	0.997	0.941	1.105	0.912	1.226	0.834	1.379
	7	1.048	0.760	1.042	0.823	1.022	0.902	1.000	1.000	0.974	1.109	0.944	1.232	0.865	1.382
	8	1.085	0.763	1.078	0.826	1.058	0.905	1.035	1.003	1.009	1.112	0.978	1.236	0.896	1.386
	9	1.124	0.766	1.116	0.829	1.095	0.908	1.072	1.007	1.044	1.115	1.012	1.240	0.929	1.390
	10	1.163	0.769	1.155	0.832	1.133	0.911	1.109	1.010	1.081	1.119	1.047	1.243	0.962	1.394

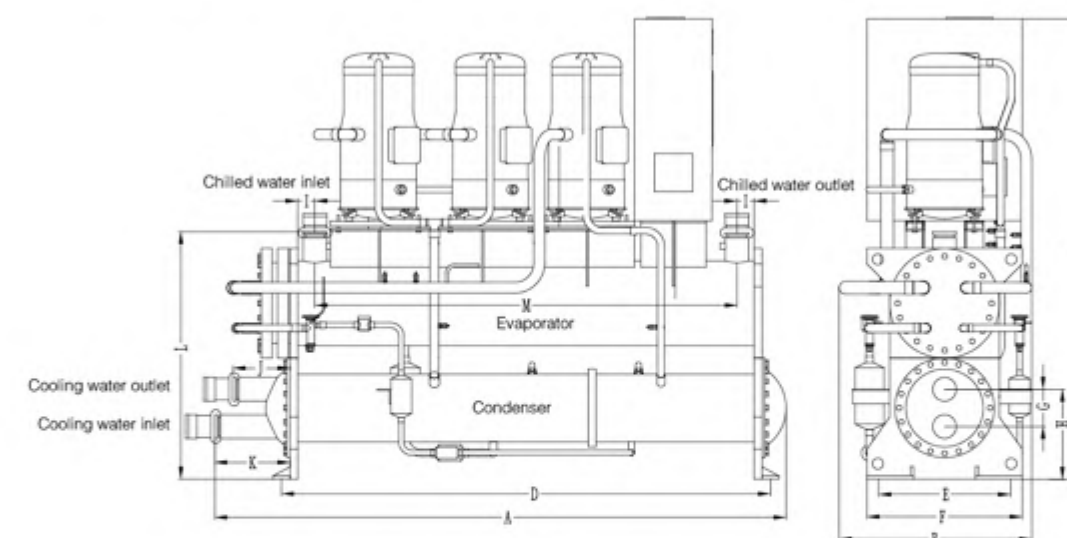
Model	Hot Water Leaving Temperature °C	Ground tube water entering temperature °C													
		-5		0		5		10		15		20		25	
		Cooling Capacity kW	Power Input kW	Cooling Capacity kW	Power Input kW	Cooling Capacity kW	Power Input kW	Cooling Capacity kW	Power Input kW	Cooling Capacity kW	Power Input kW	Cooling Capacity kW	Power Input kW	Cooling Capacity kW	Power Input kW
TWS-MCG	40	0.640	0.863	0.759	0.876	0.879	0.888	1.016	0.900	1.173	0.912	1.319	1.082	1.465	1.090
	42	0.643	0.901	0.757	0.914	0.875	0.927	1.009	0.939	1.164	0.950	1.308	1.121	1.449	1.131
	45	0.646	0.963	0.754	0.976	0.869	0.988	1.000	1.000	1.153	1.012	1.297	1.183	1.431	1.197
	46	-	-	0.753	0.997	0.867	1.010	0.997	1.021	1.146	1.033	1.290	1.205	1.419	1.223
	48	-	-	0.752	1.042	0.863	1.054	0.991	1.066	1.137	1.077	1.281	1.248	1.403	1.267
	50	-	-	0.566	1.089	0.860	1.100	0.986	1.112	1.129	1.124	1.271	1.292	1.386	1.316
	55	-	-	-	-	0.850	1.180	0.976	1.190	1.120	1.202	1.259	1.351	1.359	1.380

Modular Dimension

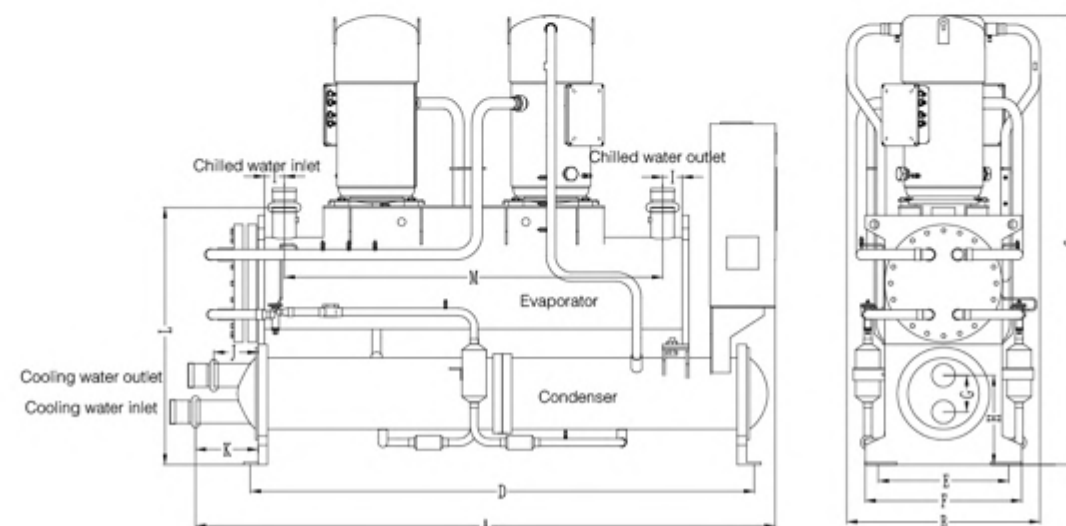
TWS20MCC(W/G)4



TWS30MCC(W/G)4



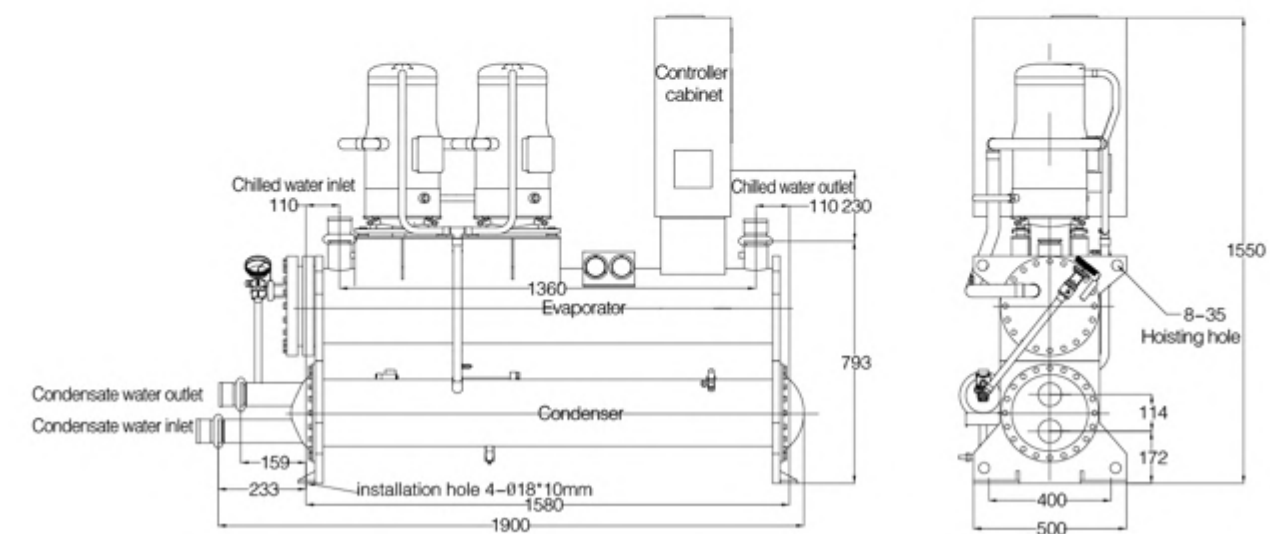
TWS40/50/60MCC4



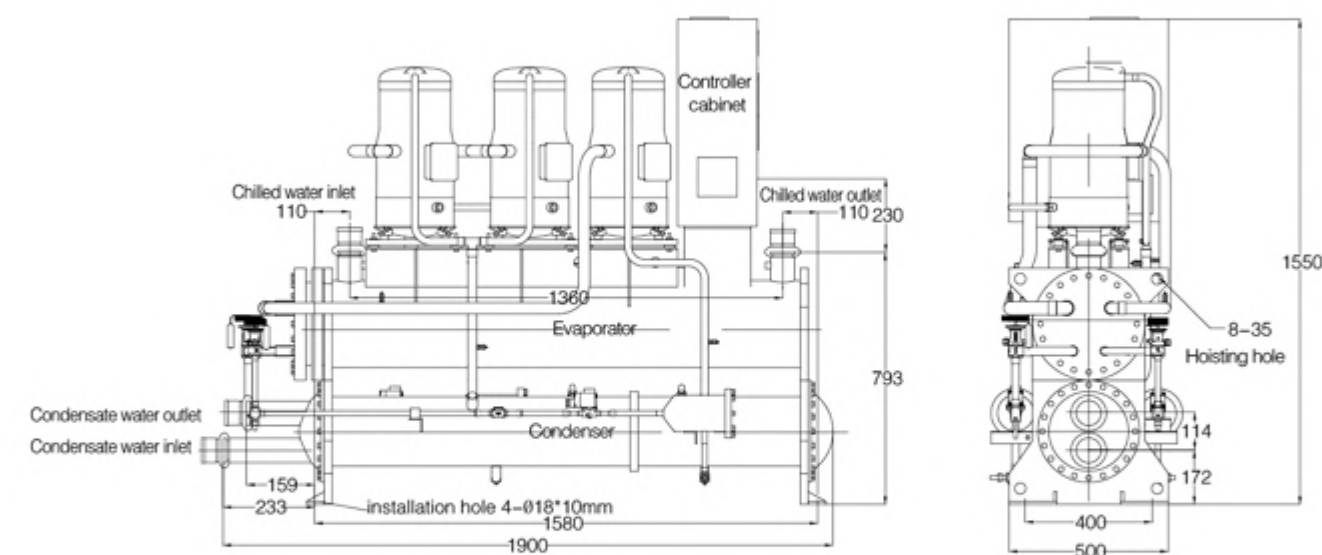
Unit Dimension (mm)

	A	B	C	D	E	F	G	H	I	J	K	L	M
TWS20MCC(W/G)4	1900	530	1490	1580	400	500	114	287	55	144	213	755	1360
TWS30MCC(W/G)4	1900	550	1490	1580	400	500	114	287	55	144	213	755	1360
TWS40/50/60MCC4	2221	740	1720	1932	500	600	140	342	80	170	240	1000	1440

TWS20MCC(W/G)2



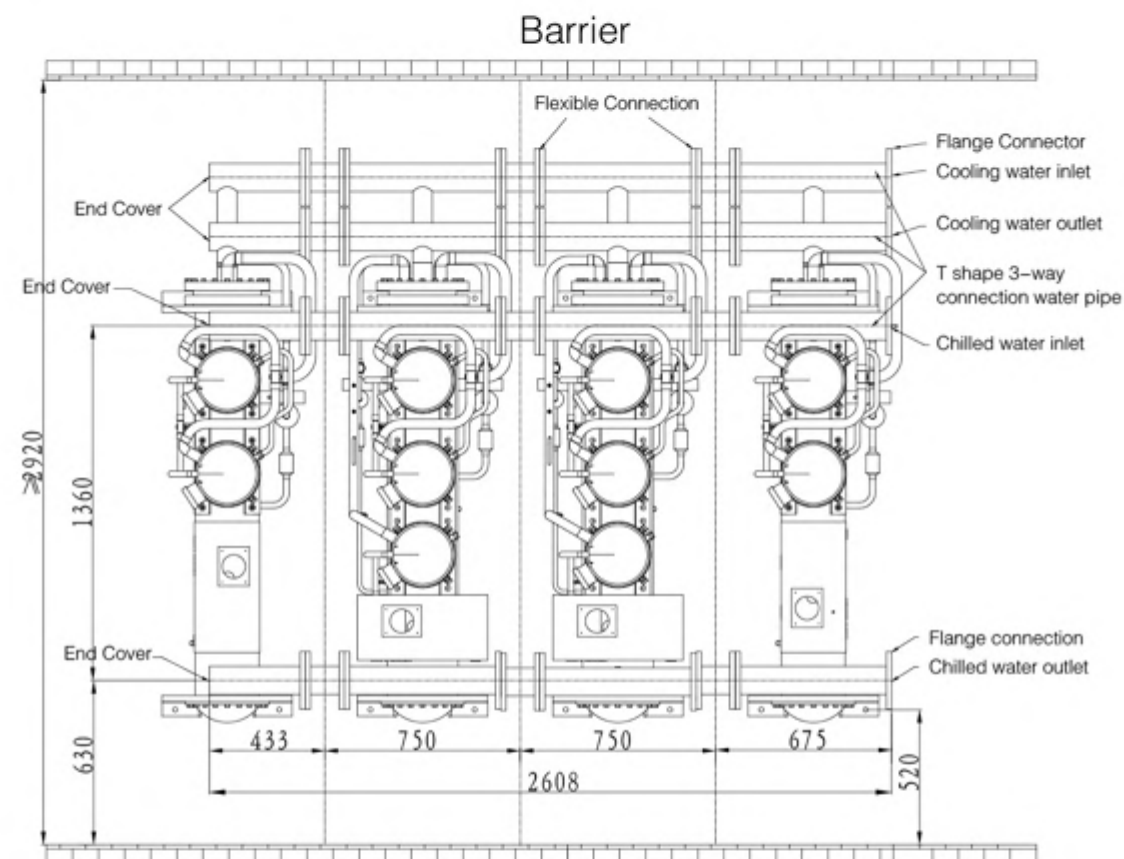
TWS30MCC(W/G)2



Note: The max. distance between chilled water inlet/outlet connection and controller cabinet door under part is 230mm.

Unit Assembly Sketch

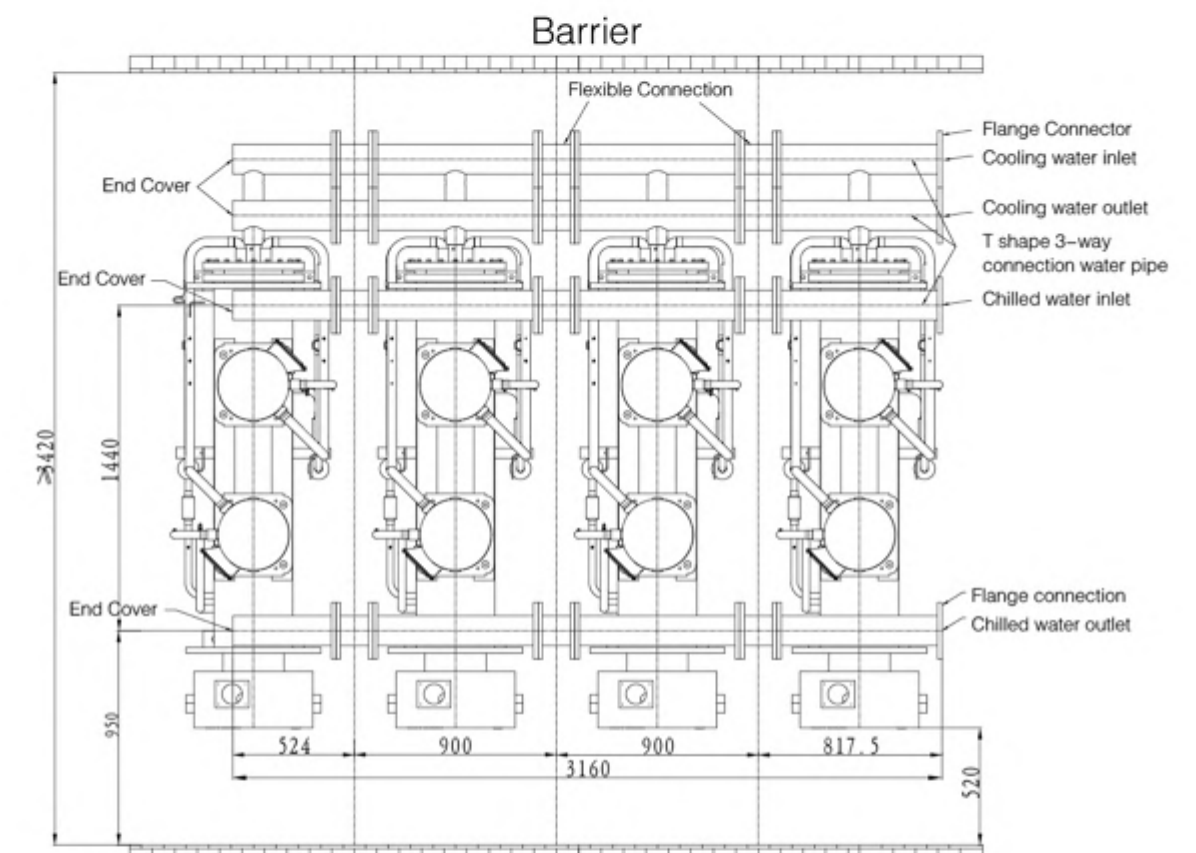
TWS20/30MCC(W/G)



Note:

- 1.End Cover, units connection hoop and T shape water pipe are optional parts.
- 2.In actual application of the products, the water pipe can install at any sides ,but must promise the same location of cooling water inlet/outlet, chilled water inlet /outlet are as well .
- 3.The assembly method of other types refer to the sketch.

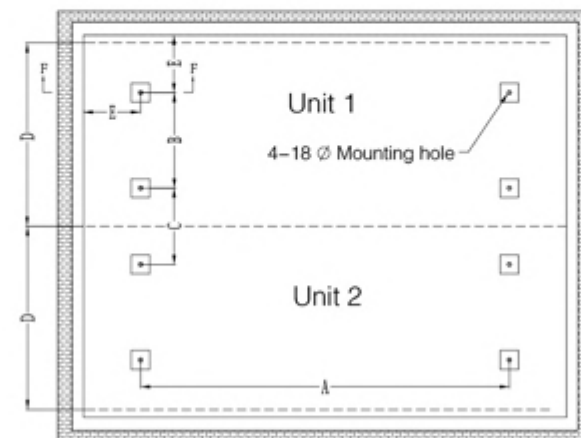
TWS40/50/60MCC(W/G)



Note:

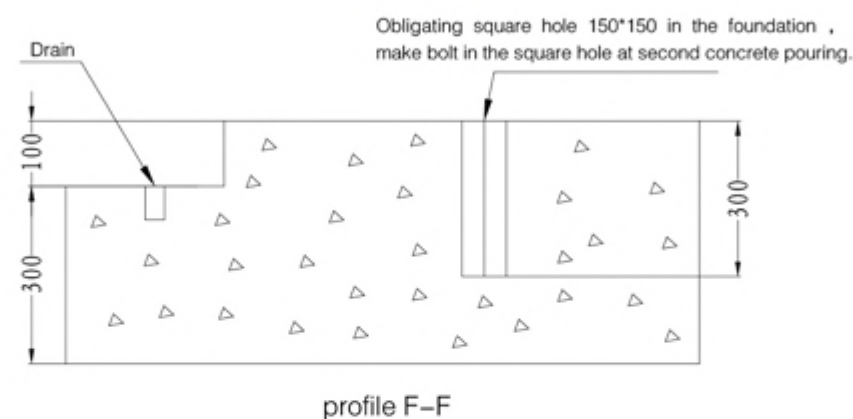
- 1.End Cover, units connection hoop and T shape water pipe are optional parts.
- 2.The water main pipe suggested to use DN125 for model between 70 to 160 cooling ton, and pipe connection can be reversed return system.
- 3.The water main pipe suggested to use DN150 for model between 160 to 240 cooling ton, and pipe connection can be reversed return system.
- 4.In actual application of the products, the water pipe can install at any sides ,but must promise the same location of cooling water inlet/outlet, chilled water inlet /outlet are as well.
- 5.Please refer to the above sketch for the assembly method of other types .

Unit Mounting Location



Unit Mounting Location data

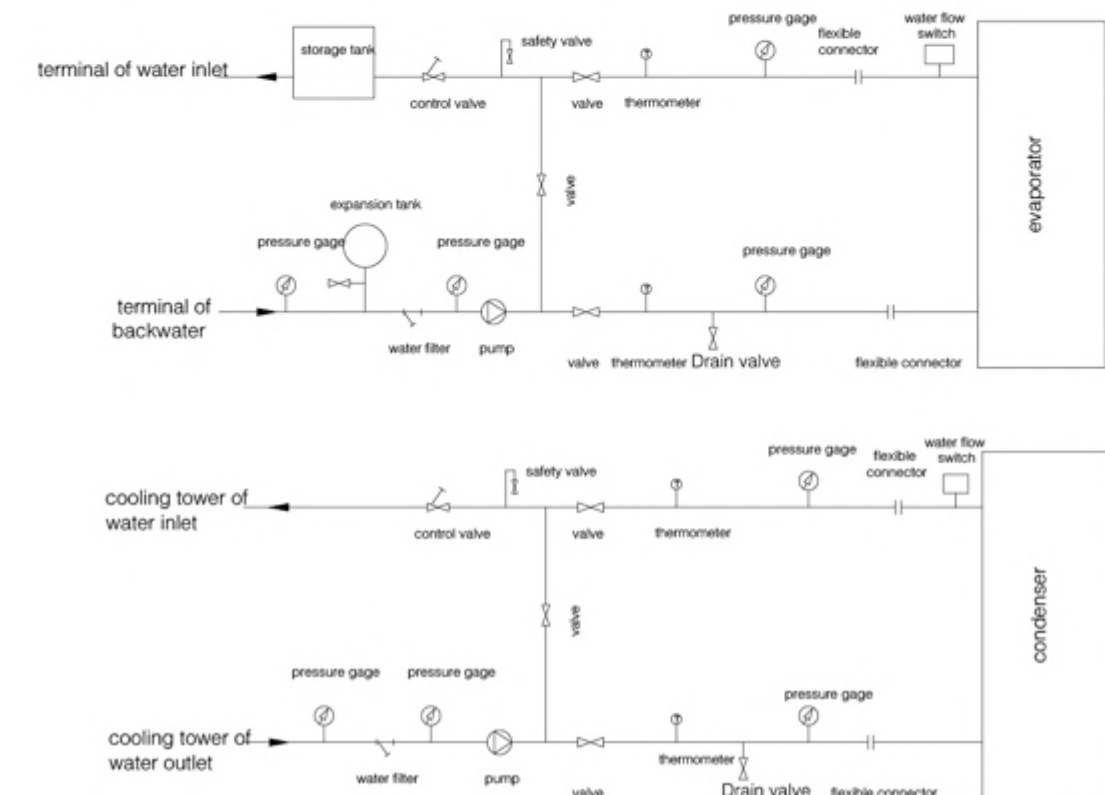
Model	A	B	C	D	E
TWS20/30	1580	400	350	750	200
TWS40/50/60	1932	500	400	900	300



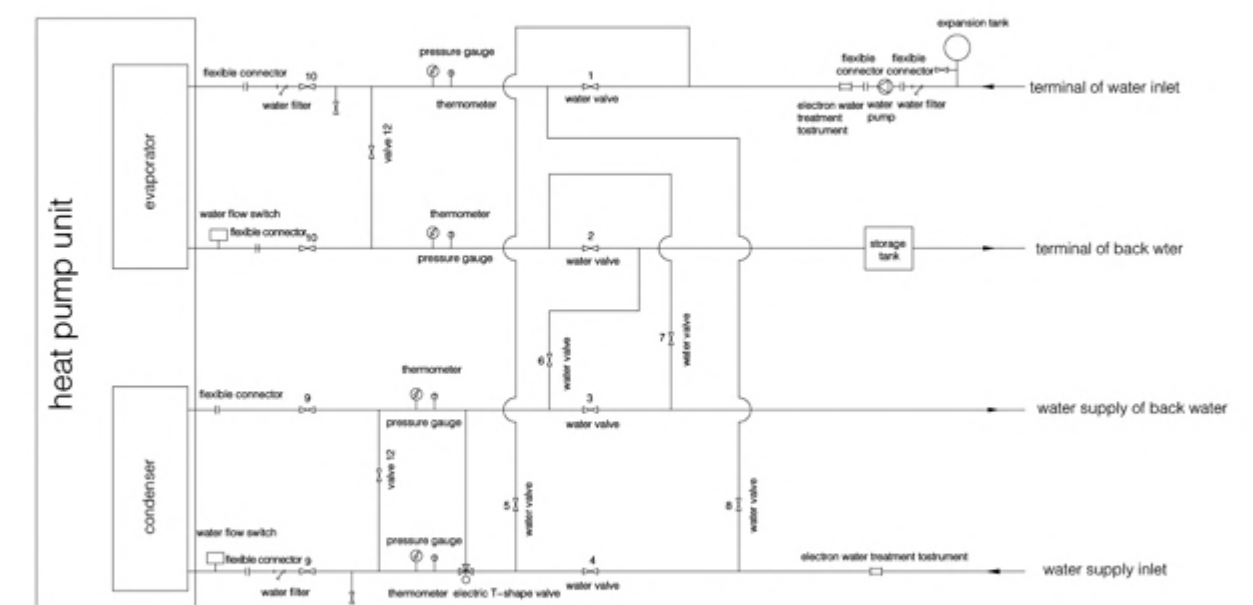
Note: unit/mm

- 1.The Unit must be placed on a rigid and solid surface, e.g.concrete slab, at special situation, also installed on no deformation plinth (such as U-bar)
- 2.The foundation must be strong enough to support the unit's operating weight .

Schematic plot of the external water pipe of the unit



Heat Pump:

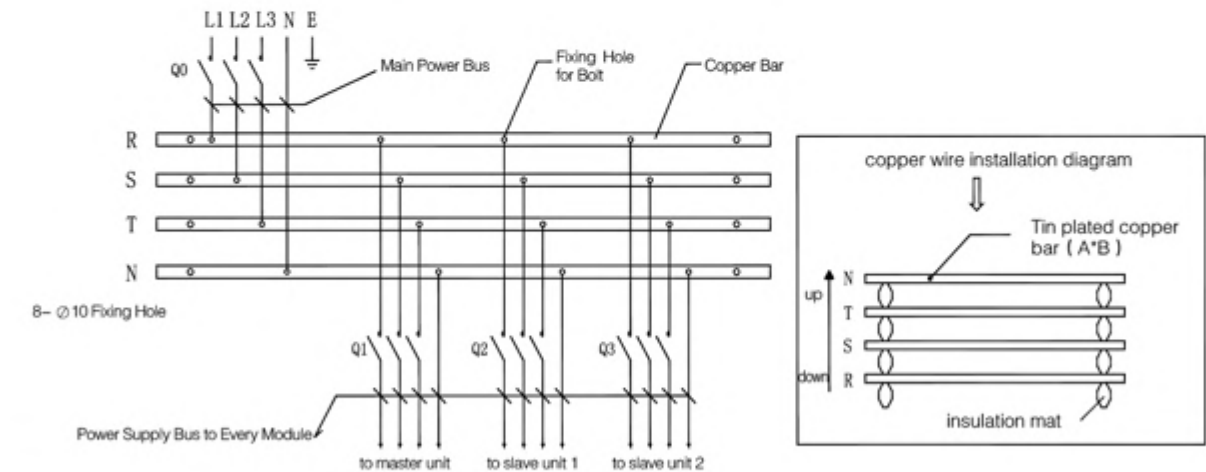


Cooling in summer: 1, 2, 3, 4, 9, 10valve opened; 5, 6, 7, 8valve closed
Heating in winter: 1, 2, 3, 4valve closed; 5, 6, 7, 8, 9, 10valve opened

Description:

1. The water circulation designing should be concise as much as possible and avoid too many bends. The direct pipelines should be arranged on the same plane as much as possible.
2. Pay attention to the water inlet/outlet port of condenser and evaporator to avoid connection mistakes.
3. Manual or automatic air discharge valve should be installed at all the highest points of water circulation system.
4. Expansion tank should use anti-corrosion and de-rusting material and should be mounted on the highest port of total pipelines system.
5. Temperature meter and pressure gauge should be installed on the chilling/cooling water inlet/outlet port.
6. All the pipe bends bottom should be provided with water discharge valve to ensure that the water of total system can be discharged.
7. The chilling/cooling water pipes connecting the machine unit heat exchanger with users water pipes should be provided with shutoff valve.
8. By pass valve should be installed between the heat exchanger inlet and outlet water pipes for the convenience of pipes repairing and swashing.
9. Flexible connectors should be provided to reduce the pipelines vibration.
10. Impurities in water system may lead to the scaling in heat exchanger, so filter should be provided before water pump.
- 11 In order to improve chilling/heating effect and save energy, pipelines should be provided with strict heat insulations.
12. In order to prevent the frequent trips of machine unit in running due to large or small load, suggest the users to install energy accumulating tank.

Electric wire connection plan



Only take TWS 130MCC4 as an example

Instructions for operation and use

1. The standard power supply is 380/3N/50Hz, the allowed voltage fluctuation is $\pm 10\%$, and the automatic air switch should be used, at the same time power supply protection should be provided.
2. When the machine unit is used for the first time every quarter, the machine unit compressor crank shaft heating box must be preheated for 12 hours with power supply connected, and it is strictly forbidden to start and operate the machine immediately after turning on power supply;
3. Please do not turn on and off the host frequently, and should not be more than 6 times for one hour. The electric control system needs to prevent damp.
4. If the machine unit will be idle for a long time, the water inside the water system must be drained thoroughly to avoid freezing and damaging the evaporator.
5. Water system should be provided with expansion tank, system circulation water must be clean, the hydrogen ion content should be ≤ 100 PPM, and adequate water volume must be maintained, the water filter needs to be cleaned at regular intervals;
6. The air conditioning system should maintain sufficient water volume to avoid the problems of frequent start and stop of machine unit and big temperature fluctuations as well as others. The water volume is usually designed according to 10 L/kw.