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WATER-COOLED PACKAGE AIR CONDITIONER

TICA CENTRAL AIR-CONDITIONING

4008-601-601

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TICA reserves the right to make changes without notice.

FORM NO. A2615G01

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。

DIRECTORY

Products overview

TICA TPW series water cooled air conditioner unit is a new generation of human friendly unitary air conditioner unit,which introducing advanced and applicable technological achievements from domestic and abroad also based on real requirement from site . These products have the following characteristics: mature technologye, compact and integrated design, easy installation ,stable and reliable performace, high EER and etc. They can be widely used for newly built and rebuilt large scale and small scale industrial and commercial places, such as factory houses, hospitals, schools, apartment stores, post and telecommunication offices, banks, machine houses and others.

TPW series of water chiller air conditioner unit comprises total 21 models, among which the TPW05–TPW25 has not only the standard model that connects with air duct, but also the model that outputs air directly for selection, which is used in the places that do not require ducts for air supply. For the places otherwise need heating, the electric heating model can be opted.

Model description

TPW 08 B D Z

- Z–directly blow type F–air duct type
- D–auxiliary electric heating Not selected–omitted
- Designing sequential A B C···
- Specification code 05, 08, 10, 16 ···
- TICA water chiller air conditioner unit

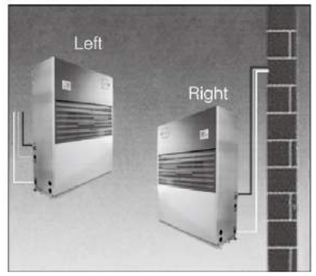
Characteristics

High efficient, energy saving, reliable

Except TPW05, this series of products all adopt multi–system designing format, the units are more liable to realize energy regulation, partial load is more efficient; the running time of compressor is more balanced, and the service life of units are prolonged.

Interchangeable connecting tube design, convenient for installation

TPW05–25 unit water circuit connecting tubes are symmetrically designed, which can be installed at site and exchanged freely, so as to reduce the construction difficulty.



High quality components with reliable performance

The series adopt high efficient scroll compressor and world famous brand high–quality refrigeration components to ensure the service life of machine sets. Compared with traditional semi–hermetic and hermetic piston type compressor, it has more reliability, higher EER and can run smoothly and noiselessly.

Industrialized designing, beautiful and generous

Unit structure uses channel steel fixed by sheet metal frame, which is firm and stable and operating smoothly; the outer part of unit adopts German Henkel spraying equipment electrostatic coating processing, which is elegant and generous, the anti–rusting ability is greatly improved, and easy to fit in enviroment

Advanced technology process, reliable quality

The quality system has passed through ISO9001 certification, and the production process (vacuuming, liquid filling, leak detecting, test run) adopts multiple automatic test processes to ensure the system air tightness. All the machine units have passed through online tests by performance test station before delivery to make sure that the performance of all units meets the requirements.

Intelligent control

The unit adopts micro computer control technique, applying intelligent control on the unit through advanced control logics. The controller will automatically adjust the equipment running state according to the relevant parameters of temperature and others to meet the requirements of indoor working condition, thus to achieve the optimum effect. The intelligent control system equipe advanced network functions which is convenient for net linked centralized monitoring. The control system can realize various functions of temperature control, high and low pressure protection, time setting, state indication, warning display, parameter setting, password protection and others with one–key start and operate human friendly.

Complete protection equipment

The unit is equipped with compressor air discharge temperature protection switch, overloading protection, high and low pressure switch, drying filter, ambient temperature control as well as delay–start device, etc to ensure the safe operation of unit.

Specification Data

Tube in tube Condenser Series

Model		TPW	05BF(Z)	08BF(Z)	10BF(Z)	12BF(Z)	16BF(Z)	20DF(Z)	25DF(Z)
Total Cooling Capacity		kW	15.00	25.00	29.00	39.00	49.00	66.00	80.00
Adjustment Range of Cooling Capacity		%	0,100	0,50,100			0,33,66,100	0,50,100	
Air Volume		m^3/h	2500	4200	5300	6500	8000	11000	13200
ESP		Pa	100(0)	100(0)	100(0)	100(0)	120(0)	150(0)	200(0)
Noise Level		dB(A)	65	62	65	65	66	68	69
Power Supply			380V/3N~/50Hz						
Total Cooling Power Input		kW	3.95 (3.80)	7.30 (6.60)	7.98 (7.31)	11 (10)	14.7 (13.64)	19.0 (16.5)	22.0 (20.2)
Refrigerant Amount	R22	kg	1.1*1	1.24*2	1.58*2	2.08*2	1.45*3	2.7*2	2.95*2
Type of Compressor									
Hermetic Scroll Type									
Condenser	Type								
	Water Flow Rate	m^3/h	3.23	5.40	6.24	8.39	10.54	14.19	17.20
	WPD	mH_2O	3.00	3.60	3.80	4.30	5.50	7.40	7.60
Fan & Motor	Fan Type		Centrifugal Fan						
	Driving Mode		Direct	Belt Drive					
Backflow/Fresh inlet dimension		mm	230*230				230*230		
Air Filter	Qty.	件	1	2					
	Dimension	mm	740*565	570*515	665*570	665*570	720*648	825*720	
Cooling Water Pipe Dimensions	Middle Drain Pan		DN25(R1)						
	Bottom Drain Pan		DN25(R1)						
Cooling Water Piping Dimension (Inner Thread)			Rc1	Rc1-1/4			Rc1-1/2	Rc2	
External Dimension	Length	mm	870	1170	1470	1470	1470	1810	1810
	Width	mm	500	500	500	500	700	700	700
	Height	mm	1650 (1900)	1700 (1910)	1700 (1900)	1700 (1900)	2000 (2270)	2000 (2270)	2000 (2270)
Weight	Cooling Only Unit	kg	170(180)	230(245)	265(285)	300(335)	455(470)	700(750)	820(840)
Unit with Electric Heater Model		TPW	05BDF(Z)	08BDF(Z)	10BDF(Z)	12BDF(Z)	16BDF(Z)	20DDF(Z)	25DDF(Z)
Optinal Eleactric Heating Capacity		kW	9	12	18	20	24	36	36
Weight of Unit with Electric Heater		kg	180(195)	245(260)	285(305)	325(360)	480(495)	740(790)	860(880)
Energy efficiency Rate			1	1	1	1	1/2	1	1

Notes:

1. Cooling capacity is based on (Indoor) 27℃ EDB / 19℃, water (entering) temp 30℃ and Water Flow Rate is Nominal Cooling Capacity *0.215CMH
2. The heat loss of motor is not considered for the cooling capacity.
3. The external static pressure data is based on standard condition.
4. The data in the brackets only refers to free blower units.
5. TICA reserves the right to make changes to the above without notice.
6. Heating capacity is for electric heating capacity.
   Standard unit is without electric heater, but it can be available upon clients'requirement.
7. Unit efficiency class is referring GB19576-2004

Shell-Tube Condenser Series

Model		TPW	30EF	36EF	45EF	50EF	55EF	60EF	65EF
Total Cooling Capacity		kW	95.00	110.00	127.00	144.00	154.00	185.00	199.00
Adjustment Range of Cooling Capacity		%	0,22,39,61, 78,100	0,33,67,100	0,14,29,43,57, 71,86,100		0,25,50, 75,100	0,22,33,44,56, 67,78,100	0,20,40, 60,80,100
Air Volume		m^3/h	17000	19800	22000	24600	26400	28800	33000
ESP		Pa	250	250	300	300	350	350	350
Sound Level		dB(A)	74	75	75	76	77	78	79
Power Supply			380V/3N~/50Hz						
Total Cooling Power Input		kW	26.5	30.8	37.2	41.5	43.5	51.5	58
Refrigerant Amount	R22	kg	5.0*2+3.7	5.4*3	4.0*3+4.3	5.5*3+5.1	6.5*4	5.8*4+4.3	5.6*5
Type of Compressor			Hermetic Scroll Type						
Hermetic Scroll Type			Fin & tube						
Condenser	Type		Shell and tube						
	Water Flow Rate	m^3/h	20.4	23.7	27.3	31.0	33.1	39.8	42.8
	WPD	mH_2O	2.90	2.90	2.96	2.81	4.28	4.20	5.00
Fan & Motor	Fan Type		Centrifugal Fan						
	Driving Mode		Belt Drive						
Backflow/Fresh inlet dimension		mm	/	/	/	/	/	/	/
Air Filter	Qty.	件	6						
	Dimension	mm	514*650	514*650	675*644	675*644	675*644	690*815	690*815
Cooling Water Pipe Dimensions	Middle Drain Pan		DN25(R1)						
	Bottom Drain Pan		DN25(R1)						
Cooling Water Piping Dimension (Inner Thread)			Rc2	Rc2-1/2			Rc3		
External Dimension	Length	mm	2028	2028	2402	2402	2402	2560	2560
	Width	mm	1103	1103	1263	1263	1263	1263	1263
	Height	mm	2030	2030	2080	2080	2080	2360	2360
Weight	Cooling Only Unit	kg	950	1010	1235	1235	1250	1350	1375
Unit with Electric Heater Model		TPW	30EDF	36EDF	45EDF	50EDF	55EDF	60EDF	65EDF
Optinal Eleactric Heating Capacity		kW	48	48	48	60	60	60	60
Weight of Unit with Electric Heater		kg	1000	1060	1285	1285	1300	1400	1425
Energy efficiency Rate			1	1	1	1	1	1	1

Notes:

1. Cooling capacity is based on (Indoor) 27℃ EDB / 19℃, water (entering) temp 30℃ and Water Flow Rate is Nominal Cooling Capacity *0.215CMH
2. The heat loss of motor is not considered for the cooling capacity.
3. The external static pressure data is based on standard condition.
4. The data in the brackets only refers to free blower units.
5. TICA reserves the right to make changes to the above without notice.
6. Heating capacity is for electric heating capacity.
   Standard unit is without electric heater, but it can be available upon clients'requirement.
7. Unit efficiency class is referring GB19576-2004

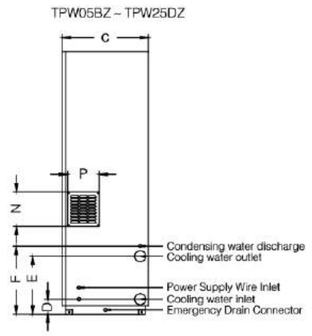
Cooling Capacity on Variant Condition

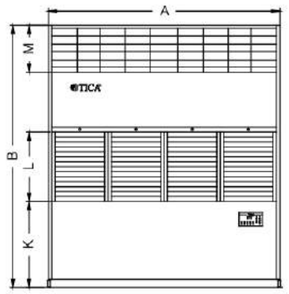
Model	Air Volume m^3/h	Return Air Temp on evaporator ℃		Entering water Temp. of condenser℃					
				22		30		38	
		DB Temp℃	WB Temp ℃	Total Cooling Capacity (kW)	Sensible Cooling Capacity (kW)	Total Cooling Capacity (kW)	Sensible Cooling Capacity (kW)	Total Cooling Capacity (kW)	Sensible Cooling Capacity (kW)
TPW05	2500	30	22	17.33	12.13	16.20	11.34	15.07	10.55
		27	19	16.05	11.24	15.00	10.50	13.95	9.77
		23	17	14.77	10.34	13.80	9.66	12.83	8.98
TPW08	4200	30	22	28.89	20.22	27.00	18.90	25.11	17.58
		27	19	26.75	18.73	25.00	17.50	23.25	16.28
		23	17	24.61	17.23	23.00	16.10	21.39	14.97
TPW10	5300	30	22	33.51	23.46	31.32	21.92	29.13	20.39
		27	19	31.03	21.72	29.00	20.30	26.97	18.88
		23	17	28.55	19.98	26.68	18.68	24.81	17.37
TPW12	6500	30	22	45.07	31.55	42.12	29.48	39.17	27.42
		27	19	41.73	29.21	39.00	27.30	36.27	25.39
		23	17	38.39	26.87	35.88	25.12	33.37	23.36
TPW16	8000	30	22	56.62	39.64	52.92	37.04	49.22	34.45
		27	19	52.43	36.70	49.00	34.30	45.57	31.90
		23	17	48.24	33.76	45.08	31.56	41.92	29.35
TPW20	11000	30	22	76.27	53.39	71.28	49.90	66.29	46.40
		27	19	70.62	49.43	66.00	46.20	61.38	42.97
		23	17	64.97	45.48	60.72	42.50	56.47	39.53
TPW25	13200	30	22	92.45	64.71	86.40	60.48	80.35	56.25
		27	19	85.60	59.92	80.00	56.00	74.40	52.08
		23	17	78.75	55.13	73.60	51.52	68.45	47.91
TPW30	17000	30	22	109.78	76.85	102.60	71.82	95.42	66.79
		27	19	101.65	71.16	95.00	66.50	88.35	61.85
		23	17	93.52	65.46	87.40	61.18	81.28	56.90
TPW36	19800	30	22	127.12	88.98	118.80	83.16	110.48	77.34
		27	19	117.70	82.39	110.00	77.00	102.30	71.61
		23	17	108.28	75.80	101.20	70.84	94.12	65.88
TPW45	22000	30	22	146.76	102.73	137.16	96.01	127.56	89.29
		27	19	135.89	95.12	127.00	88.90	118.11	82.68
		23	17	125.02	87.51	116.84	81.79	108.66	76.06
TPW50	24600	30	22	166.41	116.48	155.52	108.86	144.63	101.24
		27	19	154.08	107.86	144.00	100.80	133.92	93.74
		23	17	141.75	99.23	132.48	92.74	123.21	86.24
TPW55	26400	30	22	177.96	124.57	166.32	116.42	154.68	108.27
		27	19	164.78	115.35	154.00	107.80	143.22	100.25
		23	17	151.60	106.12	141.68	99.18	131.76	92.23
TPW60	28800	30	22	213.79	149.65	199.80	139.86	185.81	130.07
		27	19	197.95	138.57	185.00	129.50	172.05	120.44
		23	17	182.11	127.48	170.20	119.14	158.29	110.80
TPW65	33000	30	22	229.96	160.98	214.92	150.44	199.88	139.91
		27	19	212.93	149.05	199.00	139.30	185.07	129.55
		23	17	195.90	137.13	183.08	128.16	170.26	119.19

Unit Dimension

Free Blow Type(TPW05~TPW25)

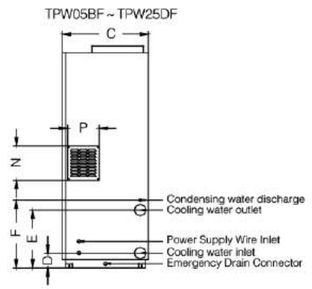
TPW05BZ ~ TPW25DZ

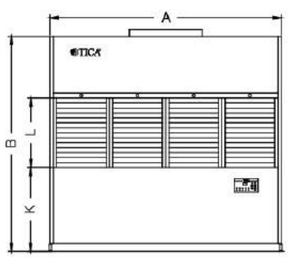




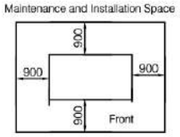
Air Duct Type(TPW05~TPW25)

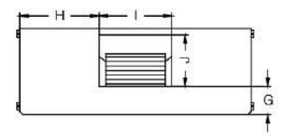
TPW05BF ~ TPW25DF





Maintenance and Installation Space

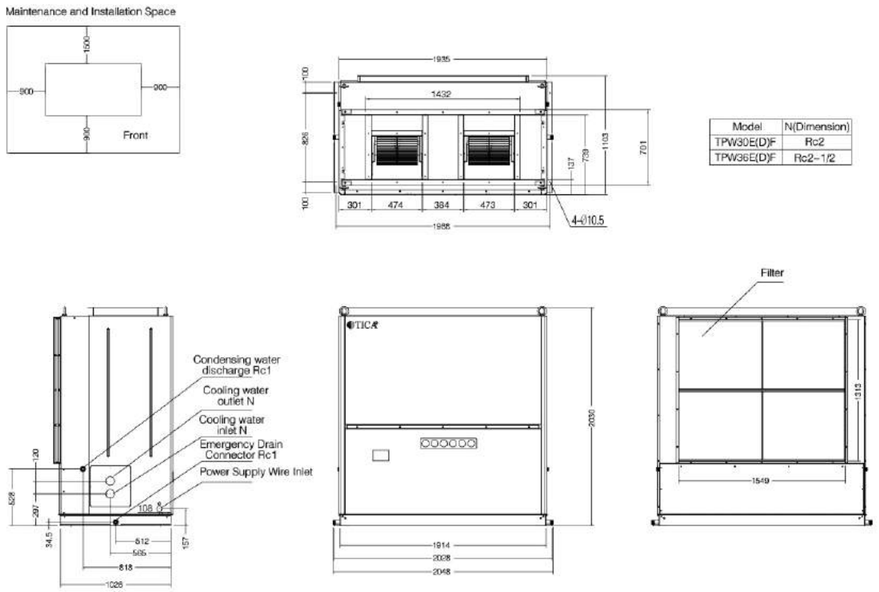




Unit Dimension

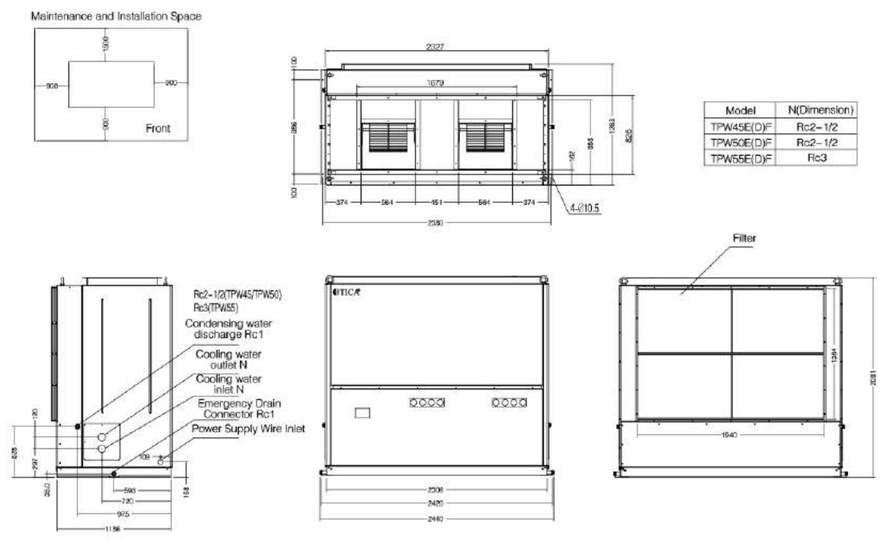
Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P
TPW05BF	870	1650	500	132	312	700	210	290	290	250	750	500	–	230	230
TPW05BZ	870	1900	500	132	312	700	–	–	–	–	750	500	255	230	230
TPW08BF	1170	1700	500	108	458	700	170	420	333	295	755	472	–	230	230
TPW08BZ	1170	1910	500	108	458	700	–	–	–	–	755	472	255	230	230
TPW10BF	1470	1700	500	108	458	700	170	570	333	295	755	472	–	230	230
TPW10BZ	1470	1900	500	108	458	700	–	–	–	–	755	472	255	230	230
TPW12BF	1470	1700	500	108	458	700	170	570	333	295	755	472	–	230	230
TPW12BZ	1470	1900	500	108	458	700	–	–	–	–	755	472	255	230	230
TPW16BF	1470	2000	700	108	458	700	220	500	473	410	780	600	–	230	230
TPW16BZ	1470	2270	700	108	458	700	–	–	–	–	780	600	290	230	230
TPW20DF	1810	2000	700	108	468	760	250	145	1122	350	840	540	–	230	230
TPW20DZ	1810	2270	700	108	468	760	–	–	–	–	840	540	350	230	230
TPW25DF	1810	2000	700	108	468	760	250	145	1122	350	840	540	–	230	230
TPW25DZ	1810	2270	700	108	468	760	–	–	–	–	840	540	350	230	230

Air Duct Type(TPW30~36)



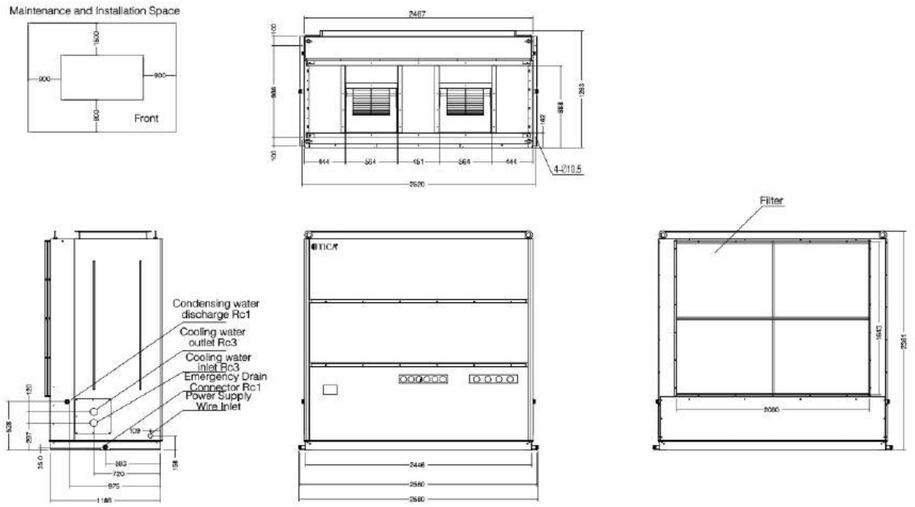
Model	N(Dimension)
TPW30E(D)F	Rc2
TPW36E(D)F	Rc2-1/2

Air Duct Type(TPW45~55)



Model	N(Dimension)
TPW45E(D)F	Rc2-1/2
TPW50E(D)F	Rc2-1/2
TPW55E(D)F	Rc3

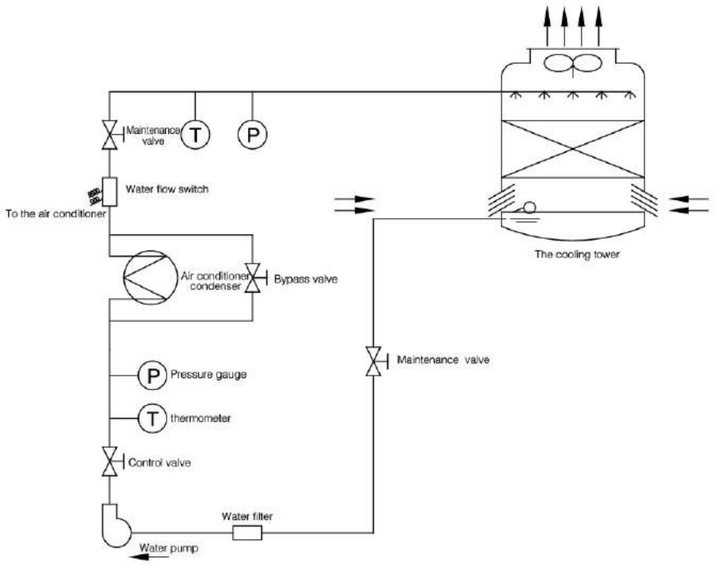
Air Duct Type(TPW60~65)



Units installation locations

- Must not be installed in the outdoor open-air environment.
- Must not be installed in damp, corrosive and explosive air environment.
- Must be installed on the horizontal floor or concrete base, and the strength of floor or base must be capable of bearing the weight of the running machine units. In order to reduce the noise, the rubber or spring vibration damping cushion is recommended to be installed on the fixed foot place.
- Water discharge, ventilation and maintenance intervals should be considered during installation, and the minimum installation clearance should refer to machine unit profile dimension diagram.
- Machine unit and connecting pipes should be isolated from the wall surface and ceiling.
- Machine unit should be installed in the places which are most insensitive to noises, such as the staircases, elevators, toilets and others nearby places. A better method is to adopt isolating wall between the machine unit and air conditioning house with doors and windows sealed. If necessary, mufflers can be installed in the air passage.

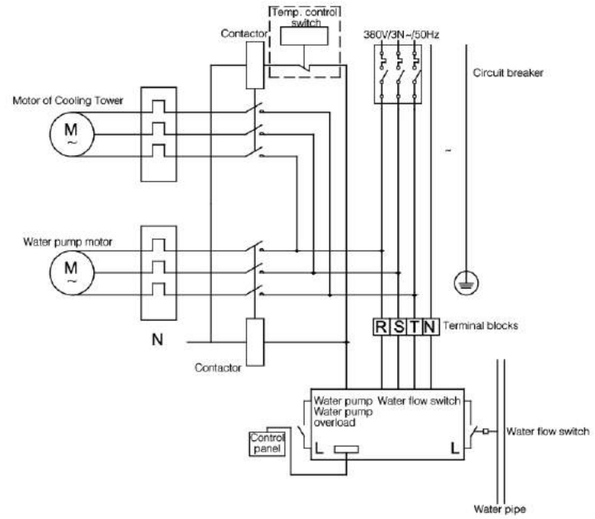
System connection diagram



Water pipe connection

- All the pipe connections should be complied with local rules and regulations, and the bending as well as vertical displacement must be reduced.
- In order to lower and reduce the water pump vibration and noise transmission, flexible connection pipes must be installed on the inlet and outlet pipes of water pump.
- In order to keep constant condensing pressure and condensing temperature, a 3-way water flow throttling valve can be adopted to adjust the water flow into the condenser, and this valve should be set to maintain the minimum temperature of condenser outlet water as 18 ℃。
- In order to prevent that the temperature is too low, a temperature switch (the set value is recommended to be about 27℃) can be provided to control then start/stop of cooling tower fans, so that the water temperature is ensured to be more close to normal temperature.
- drain pipe for Condensing water has two standard connection types.
  1. Led from the discharge water tray which forms isolating layer between evaporator and condenser.
  2. Led from the attached discharge water tray which is used as machine unit bedplate.
- In order to prevent the outside air entering the evaporator and facilitate the discharge of condensing water, a small circuitous pipe section (water trap) can be provided in any location of the drain pipe and should be kept 51 mm lower than the drain pipe.
- The drain pipe should reach out of the walls and the discharge water must not flow onto the wall surface.
- The water pipe should adopt heat insulation layer, or else the dropping of condensing water may occur.
- The suction pipe section of pump and the outlet port of air conditioner condenser are provided with valves for maintenance, and the outlet port of pump is provided with flow throttling valve. It is strictly forbidden to adjust the water pipe by the pump inlet valve.

Electric Wiring (When Cooling in Winter is required.)



Note: If cooling is required in Winter time, please connect the wires according to the above diagram.
Add a temp. control switch(dotted area) to control the fan motor of cooling tower.

Electric Diagram

Model			TPW05	TPW08	TPW10	TPW12	TPW16	TPW20	TPW25
Power Supply			380 3N~50Hz						
Power Line	Live(R/S/T)	Section area(mm^2)	4	4	6	6	10	16	16
		Qty.	3						
	Neutral wire	Section area(mm^2)	4	4	6	6	10	10	10
		Qty.	1						
	Grounding wire	Section area(mm^2)	4	4	6	6	10	16	16
		Qty.	1						

Model			TPW30	TPW36	TPW45	TPW50	TPW55	TPW60	TPW65
Power Supply			380 3N~50Hz						
Power Line	Live(R/S/T)	Section area(mm^2)	25	35	50	50	70	70	95
		Qty.	3						
	Neutral wire	Section area(mm^2)	16	25	25	25	35	35	50
		Qty.	1						
	Grounding wire	Section area(mm^2)	16	16	25	25	35	35	50
		Qty.	1						

Note:1.Data inside the brackets refers to units with electric heater. Other data is for standard units.
2. The wire connection terminal are prepared before the units leave factory. The wires need to be prepared by customers.

Running

TPW unit has single power connection and require no additional control power source. The machine unit power resource adopts 380V/3N–/50Hz, control power source is 220v/–/50Hz.

The protection measures include compressor overloading protection, electric motor overloading protection, system high and low pressure protection and others.

Operating range

Supporting power source		Voltage range (V)	Condenser inlet water temperature range ℃	Evaporator Air inlet		Control pressure set by factory (MPa)	
Compressor	Fan			Wet–bulb temperature ℃	Dry–bulb temperature ℃	Low pressure	High pressure
380V/3N~/50Hz	380V/3N~/50Hz	342–420	16–40	13–24	20–32	0.15–0.3	1.9–2.4

Maintenance

TPW series unit is highly automatized equipment and the running conditions should be checked regularly. Provided long–term effective maintenance work, the machine unit running reliability and service life will be greatly improved.

- The water filter installed outside the machine unit should be regularly cleaned. Make sure the water quality in the system is clean in order to avoid the damage of machine unit due to dirty or blocked filter.
- During maintenance and using of this machine unit, users should take notice that: all the safety protection devices are all set completely before leaving factory, and the users are prohibited to make self–adjusting, for the unit damages caused by the users self–adjusting, our company will assume no liability.
- Please do not stack miscellaneous stuff around the machine unit to avoid blocking the inlet and outlet air port. Surroundings of machine unit should be kept clean and dry with good ventilation. If the filtering screen can be washed at regular intervals (1–2 months), its good heat exchanging effect can be maintained and energy can be saved.
- Frequently inspect the water supply and air exhausting work in water system to avoid the air entering into this system which will lead to the decreasing of circulating water or water circulation difficulty and thus affect the refrigerating effect and working reliability of machine unit..
- Frequently check the connecting wires of power source and electric system are firm or not, and whether there are abnormal actions of electric elements. Any abnormal conditions discovered should be repaired and replaced timely, and the machine unit should have reliable grounding.
- Frequently check the working conditions of various components of machine unit, check the working pressure of chilling system. Check whether there are oil stain in pipe connectors and air charging valves inside the machine, and ensure the machine unit chilling system have no leakage.
- After one operation cycle of machine unit is finished, if the machine will be idle for a long time, the water inside machine pipes should be discharged ,cut off power supply , and the machine should be covered with protection shield (the machine unit has no protection shield when leaving factory). When the machine unit is started again, the system should be filled with water. After the machine is inspected completely, connect the machine unit power supply and preheat it for over 6 hours. It cannot be operated until everything is confirmed to be normal.

备 忘 录

日 期	主 题