

# FAN COIL UNIT

**TICA CENTRAL AIR-CONDITIONING**



TICA is a hi-tech enterprise specialized in R&D, manufacturing, sales and services of air-conditioning and refrigeration products. Established in 1991, it has developed into one of the top four Chinese air-conditioning brands, with factories in Nanjing, Tianjin and Guangzhou, and a network of over 70 sales and service filiales around the world.

TICA has invested up to RMB 600 million in the first phase to build the top notch central air-conditioning R&D and production base, credited as the state enterprise R&D center. Certified by CNAS, it serves as a national R&D public service platform.

TICA produces over 30 series of products, covering AHUs, VRFs, screw chillers and centrifugal chillers, diverse enough to meet various requirements with regards to comfort and manufacturing processing application.

TICA is a strong competitor in chillers and commercial air conditioning products. It is the largest producer of AHUs in China for five consecutive years and covers over 40% of the market share as the supplier to such industries as micro-electronics, surgery operation room equipment and biopharmaceuticals.

TICA has established a global strategic joint venture with United Technologies Corporation (UTC) whose businesses include the world's most advanced Pratt & Whitney Aircraft Engines, the largest air-conditioning company Carrier and the biggest elevator company Otis.

The giant UTC transfers such global cutting-edge core technologies as large centrifugal chillers, screw chillers, and ORC systems to TICA, thrusting TICA 20 years ahead of its Chinese counterparts in terms of centrifuge technology and 30 years ahead in cryogenic power generation technology. Meanwhile, TICA and UTC will integrate global resources to create a brand-new international market pattern.

Meanwhile, the company has also provided energy-saving air-conditioning system integration solutions to both domestic and foreign users like Zhongnanhai, the Great Hall of the People, Beijing Bird's Nest stadium, the Water Cube, the Wukesong Indoor Stadium, Petro China, Sinopec, State Grid, Nanjing Panda, Hangzhou Xiaoshan Airport, Hainan Airlines Group, Shangri-La Hotel, Manila Ocean Park, Abu Dhabi Al Muneera, SM City in Philippines and Unilever, etc.



Nanjing Headquarter



Tianjin Base



Guangzhou Base



Chengdu Base

Features	1
Production Line	2
Ceiling Concealed FCU - TCR	4
Ceiling Concealed Low Noise FCU - TCRQ	8
Ceiling Concealed High Pressure FCU - TFM	12
Cassette Type FCU - TKM	15
Ceiling & Floor Exposed FCU - TC	18
Wiring Diagrams	20
Installation	23
Maintenance and Service	24

TICA owns five production sites in Nanjing, Tianjin, Guangzhou, Chengdu and Kuala Lumpur, and a network of over 70 sales and service filiales around the world.

Its Nanjing HQ base received 3-star certification for national No. 001 green industrial construction.



Nanjing Headquarter



Tianjin Base



Guangzhou Base



Chengdu Base

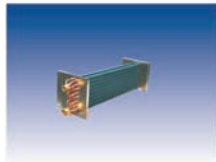
# Features

## Superior Product Quality



All fan coil units are manufactured in a ISO9001:2000 and ISO14000:2004 certified manufacturing facility whereby highest products quality is always top priority. The products' quality standard has been recognized through successfully obtaining the CE marking certification which in turn comply with the stringent EU requirements

## High Efficiency Heat Exchanger



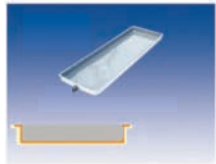
High quality copper pipes with slit profile aluminum fins are being transformed into high efficiency heat exchanger through advance design, manufacturing equipment and processes.

## Low Noise



Through straight static and dynamic balancing tests of motors, coupled with high quality thermal and acoustic insulation in the unit. Superb low noise performance is achieved.

## No leakages



One piece molded drain with integral thermal insulation and professional welding skill enable all condensate water to be collected and prevent condensation at the outside of the drain pan.

## Use High Efficiency DC Motor



High efficiency, average consumed power is 50% of common motor, leading low operation cost of air conditioner. Avoiding noise from carbon brushes. It is much silent when operating under medium speed.

## Multiple ESP Options



Standard fan coil units come with low ESP(12Pa) and high ESP(30Pa,50Pa), options to suit different applications .In addition, 80Pa fan coil units are available as non-standard options. High air volume FCU comes with standard ESP and high ESP options to add to the product line up.

## Slim And Compact Design



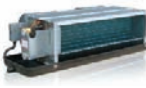



Light and rigid construction due to the compact and strong structural design of the unit .Slim unit design also fulfills the stringent space requirement of today building design. High air volume FCU with the height of only 430mm is most suitable for applications that demand for high air flow but with space saving in mind.

## Easy Maintenance



The fan coil unit are equipped with high quality electric motor with low noise bearing that do not require lubrication and thus minimum maintenance effort required. Blowers and also motors can be dismantled individually if cleaning of heat exchanger is needed. High efficiency filter provides better filtration than normal filter with longer operational life and easy to clean.

## Production Line

Name	Model	Air Flow(CFM)	Cooling Capacity(W)	Heating Capacity(W)
TCR (Ceiling Concealed FCU) TCRQ (Ceiling Concealed -Low Noise FCU)		TCR: 200/300/400/500/600/ 700/800/1000/1200/1400 TCRQ: 200/300/400/500/ 600/700/800/1000/1200	TCR: 1635~13000 TCRQ: 1635~11250	TCR: 3900~22100 TCRQ: 3500~18800
TFM (Ceiling Concealed - High Pressure FCU)		800/1000/1200/1600/1800/ 2000/3000	5300~34410	7910~55990
TC (Ceiling & Floor Exposed FCU)		200/300/400/500/600/ 800/1000/1200/1400	1380~10500	2200~16800
TKM (Cassette Type FCU)		300/400/500/600/ 800/1000/1200	2140~10800	4050~17000







## Optional Accessories

TICA has a series of optional accessories for different requirements on the following:

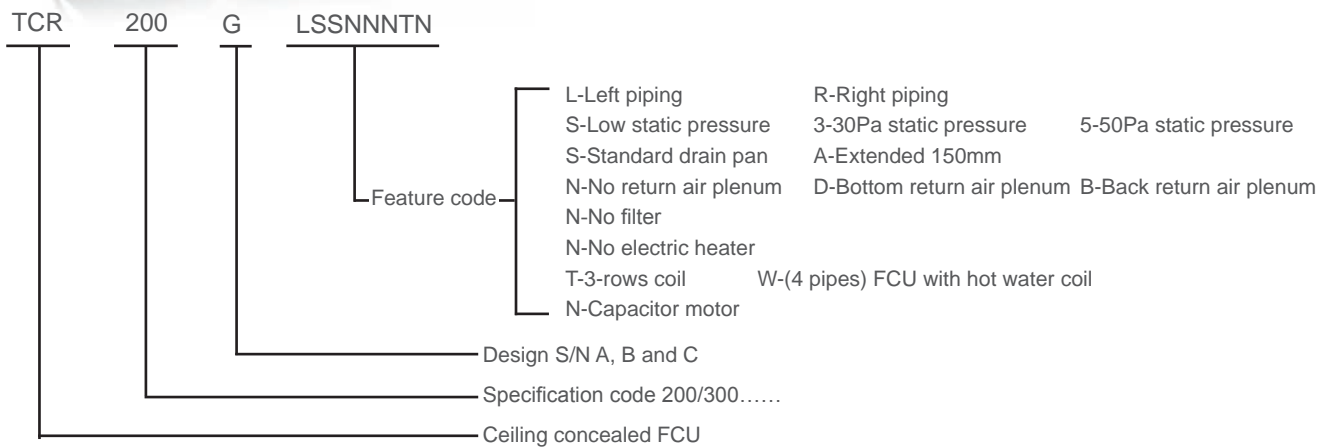
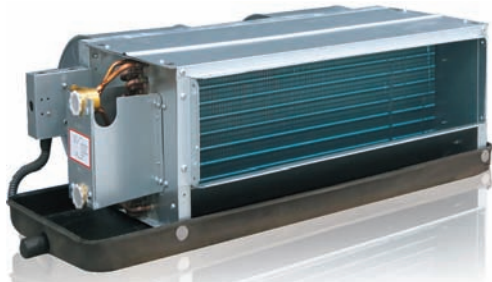
No.	Options	TCR		TCRQ	TC-DA	TC-DB	TKM	TFM
		2 Pipes	4 Pipes	2 Pipes				
		3 rows	3+1	3 rows				
1	Brushless DC Motor	√	√	√	×	×	×	×
2	Return Air Plenum	√	√	√	×	×	×	√
3	Liquid Crystal Thermostat	TA108 series TA8023 series TMC316 series	TA108 series TA8023 series TMC316 series	TA108 series TA8023 series TMC316 series	×	TA108 series TA8023 series TMC316 series	×	TA108 series TA8023 series TMC316 series
4	Wired Controller	×	×	×	×	×	90C series	×
5	Remote Controller	√	√	√	√	√	√	√
6	Motorized Valve	TA series	TA series	TA series	TA series	TA series	TA series	×

Note:

1. TC-A and TKM-C are provided with remote controllers;
2. Contactor is required when installing TFM liquid crystal thermostat;
3. The two-way valve of two-wire system needs to be selected for TC-A and TKM-C.

Thermostat	Mechanical Thermostat	TA107 Series	TA107DB	<ul style="list-style-type: none"> <li>● Controls electric valve and 3-speed fan motor; two-/three-wire valve available</li> <li>● Slide switch for enhanced comfort and control; long service life</li> <li>● Large knob to adjust set temperature, pointer display, and clear scale to ensure simple operations</li> </ul>	
	LCD Thermostat	TA108 Series	TA108DB2	Two-pipe system/220V/three-speed fan/three-wire valve/water valve closed and fan turned off when the temperature is reached	
			TA108DA2	Two-pipe system/220V/three-speed fan/three-wire valve/water valve closed but fan continues running when the temperature is reached	
			TA108DB2-RL	Two-pipe system/220V/three-speed fan/three-wire valve/water valve closed and fan turned off when the temperature is reached + remote control + blue backlight	
			TA108FCV2	Four-pipe system/220V/three-speed fan/two-wire cold water valve/two-wire hot water valve/water valve closed but fan continues running when the temperature is reached	
TA8023 Series	TA8023DB2-L-MD	<ul style="list-style-type: none"> <li>● RS485 interface available; Modbus is used to implement group control;</li> <li>● Low temperature protection and failure alarm function; key lock (optional); power failure memory (optional);</li> <li>● Large LCD screen with optional blue button backlight, looking elegant and luxury;</li> <li>● Electronic thermostat, 3-stage fan speed; two-/four-coil system (optional); two-/three-wire valve (optional).</li> </ul>			
TA-YK Series	TA-YK02	<ul style="list-style-type: none"> <li>● Used together with the flexible-range TA108DB2-RL remote controller.</li> </ul>			
TMC316 Series		TA-S3	<ul style="list-style-type: none"> <li>● Touch screen operation</li> <li>● 3 fan speeds, AC and DC fan coils both available</li> <li>● Optional RS485 interface for group control</li> </ul>		
Motorized Valve	TA-G Series	TA-G2-3/4-S2	<ul style="list-style-type: none"> <li>● Driver and valve body can be quickly removed and installed easily without using any tools;</li> <li>● Applicable to various cooling/heating coil control systems; convenient, reliable, easy to install;</li> <li>● Two-/Three-way valve optional; multiple voltages available for the driver;</li> <li>● Driven by the hermetic unidirectional hysteresis synchronous motor and reset by a stainless steel spring; valve body formed by forging and pressing brass, stainless steel base and aluminum housing, ensuring reliability and long service life of the product.</li> </ul>		
		TA-G3-3/4-S2			

# Ceiling Concealed FCU - TCR



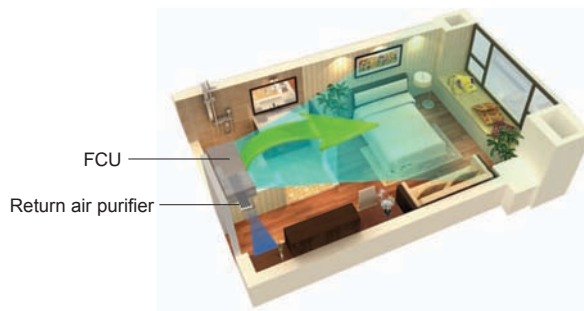
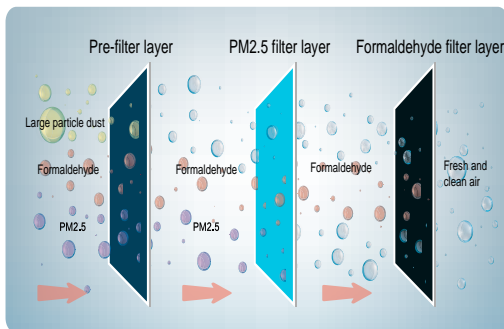
## 1. Different ESP for option

12Pa,30Pa,50Pa is standard,and 80Pa can be customized.

## 2. Multiple coils design

Two-pipe system (3 rows) and four-pipe system (3+1) are available.

## 3. Return air purifiers as optional to make environment clean



### Operating principles:

The pre-filter layer removes hair, dust, and large particles from the air; the professional PM2.5 filter layer adopts the unique electrostatic technology to remove PM2.5 from the air through physical adsorption measures, without causing ozone hazard; the capture agent on the formaldehyde filter surface shows a formaldehyde removal capacity more powerful than that of the traditional activated carbon net, and converts the formaldehyde in air into a kind of safe and harmless substance through chemical reaction, instead of releasing it into the room with air and without leading to secondary pollution because of filtration adsorption and heating.

# TCR Ceiling Concealed FCU (3 rows 2 pipes)

TCR		200G	300G	400G	500G	600G	700G	800G	1000G	1200G	1400G	
Air Flow m³/h	High	340	510	680	850	1020	1170	1360	1700	2040	2380	
	Medium	270	380	510	640	780	880	1030	1290	1540	1850	
	Low	190	280	340	450	560	610	740	890	1040	1255	
Total Cooling Capacity W	High	2210	3200	4150	5000	5950	6600	8100	9100	11250	13000	
	Medium	1990	2782	3570	4197	5200	5600	6882	8200	9613	11700	
	Low	1635	2304	2950	3298	4200	4600	5749	6700	7403	7560	
Sensible Cooling Capacity W	High	1590	2285	2880	3570	4200	4700	5880	6700	8260	9750	
	Medium	1400	1920	2420	2930	3570	3900	4880	5700	6935	8280	
	Low	1050	1555	1930	2210	2900	3200	3935	4500	5120	5945	
Heating Capacity W		High	3900	5200	6500	7870	9800	10900	13570	14900	22100	
Rated Power Input (AC Motor) W	12Pa	High	30	45	55	72	90	100	128	150	189	228
		Medium	27	36	43	58	80	97	112	130	165	198
		Low	23	30	35	48	68	78	95	110	136	165
	30Pa	High	38	55	65	82	100	120	148	170	212	253
		Medium	32	45	50	64	80	105	133	160	195	230
		Low	27	33	37	53	70	90	128	140	170	195
	50Pa	High	45	62	75	91	115	130	165	200	250	290
		Medium	36	50	65	86	105	110	150	190	230	270
		Low	30	42	55	73	90	96	122	170	200	250
Sound Pressure Level (dB(A))	Low Static Pressure (12Pa)	High	35	38	39	41	45	46	46	47	49	51
		Medium	28.5	30	31	32	39	41	40	41	44	47
		Low	20.5	21	22	24	33	33	31	32	34	36
	30Pa	High	38	41	42.5	45	46.5	48	47	49	51	52
		Medium	30.5	32	34	38.5	38.5	41	41	43	46	48
		Low	23	22	22	29.5	31	32	32	34	35	36
	50Pa	High	42	43	45	47	49	50	50	52	53	53
		Medium	35.5	36	38	38.5	45	44	44	46	47.5	49
		Low	29	28	28	29	37	36	36	38	42	42
Fan	Type	Centrifugal (Blade: Forward-Curved)										
	Quantity	1	2	2	2	2	2	3	4	4	4	
Motor	Type	AC										
	Insulation Class	B										
	Protection Class	IP20										
	Power Supply	220V~50Hz										
	Quantity	1	1	1	1	1	1	2	2	2	2	
Coil	Type	Seamless copper tube mechanically bonded to aluminum hydrophilic fin										
	Max. Working Pressure MPa	1.6										
	Pipe Connection	Rc3/4 (Taper Pipe Female Threaded)										
	Water Flow Rate m³/h	0.42	0.55	0.72	0.87	1.05	1.12	1.39	1.67	1.90	2.23	
Water Resistance	Cooling Mode kPa	25	25	30	30	40	40	35	40	40	50	
	Heating Mode kPa	20	20	25	25	35	35	30	35	35	45	
Condensate Drain Pan	Pipe Connection	Rc3/4 (Taper Pipe Male Threaded)										
Dimensions (without return air plenum)	L mm	695	845	930	995	1085	1235	1530	1530	1795	1795	
	W mm	470	470	470	470	470	470	470	470	490	490	
	H mm	230	230	230	230	230	230	230	230	250	250	
Net Weight (kg)	Without plenum box	11	13	15	16	17	18.5	24.5	26	31	31.5	
	With plenum box	13	16	18	19	20	22.5	30	30	37	37.5	

**Note:**

- Cooling capacity is based on the following: a) Water temperature: 7°C (inlet)/12°C (outlet) b) Air entering condition: 27°C DB/19.5°C WB.
- Heating capacity is based on the following (with same water flow rate as cooling cycle): a) Water temperature: 60°C (inlet) b) Air entering condition: 21°C DB.
- Low ESP means 0Pa with air vent & filter and 12Pa without air vent& filter.
- The air volume is tested under entering air condition of 20°C DB and dry coil condition.
- The sound pressure level is based on 11.5dB(A) hemi-anechoic room background noise.
- Can adjust left or right direction at site, but correct cooling & heating capacity must multiply correction factor 0.9 after adjustment.
- FCU with return air purifier, correct air flow, cooling capacity and heating capacity must multiply by correction factor 0.85. In order to ensure enough air flow, cooling capacity and heating capacity, ESP 30Pa FCU is suggested to choose if ESP is 12Pa. ESP 50Pa FCU is suggested to choose if ESP is 30Pa.
- The manufacturer reserves the rights to make changes to the above specifications without prior notice.



# TCR Celling Concealed FCU (3+1 rows, 4 Pipes)

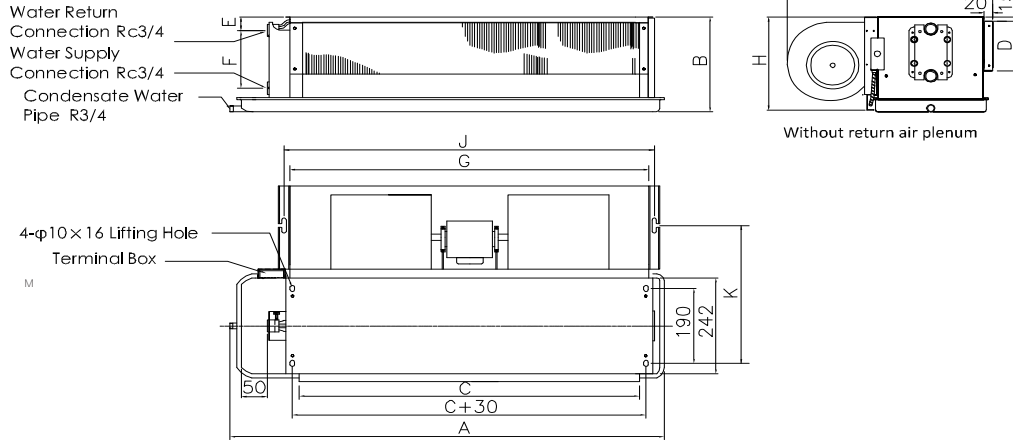
TCR		200G	300G	400G	500G	600G	700G	800G	1000G	1200G	1400G	
Air Flow m³/h	High	340	500	680	830	1000	1140	1340	1700	2040	2380	
	Medium	270	380	510	620	750	880	1030	1290	1540	1975	
	Low	190	240	340	420	560	610	720	890	1040	1255	
Total Cooling Capacity W	High	2210	3200	4150	4800	5950	6800	7900	9200	10275	13500	
	Medium	1890	2782	3570	4150	5200	5900	6900	8000	8500	11000	
	Low	1500	2304	2950	3400	4200	5000	5800	6700	7450	9500	
Sensible Cooling Capacity W	High	1590	2285	2880	3400	4200	4700	5750	6600	7400	9400	
	Medium	1350	1920	2420	2880	3570	3900	4800	5500	6200	7900	
	Low	1050	1555	1930	2210	2900	3200	3700	4200	4930	6200	
Heating Capacity W		High	2050	3000	3850	4500	5650	6300	7550	8500	12700	
Power Input W	Low Static Pressure (12Pa)	High	30	45	55	72	90	100	128	150	189	228
		Medium	27	36	43	58	80	97	112	130	165	198
		Low	23	30	35	48	68	78	95	110	136	165
	30Pa	High	38	55	65	82	100	120	148	170	212	253
		Medium	32	45	50	64	80	105	133	160	195	230
		Low	27	33	37	53	70	90	128	140	170	195
	50Pa	High	45	62	75	91	115	130	165	200	250	290
		Medium	36	50	65	86	105	110	150	190	230	270
		Low	30	42	55	73	90	96	122	170	200	250
Sound Pressure Level (dB(A))	Low Static Pressure (12Pa)	High	36.5	38	39	42	45	46	46	47	49	51
		Medium	30	30	32	33	40	41	41	41	44	47
		Low	21	21	24	25	33	33	33	33	34	36
	30Pa	High	38.5	41	42.5	45	46.5	48	47	49	51	52.5
		Medium	32	32.5	36	38.5	40	42	41	43	46	48
		Low	24	23	24	29.5	32	33	32	34	35.5	38
	50Pa	High	42	43.5	45	47	49	50	50	52	53	53.5
		Medium	37	38	38	40.5	45	45	44.5	46.5	47.5	50
		Low	30.5	29.5	28	31	37	36	35	38	42	45
Fan	Type	Centrifugal (Blade:Forward-Curved)										
	Quantity	1	2	2	2	2	2	3	4	4	4	
Motor	Type	Split-capacitor motor with ball bearing										
	Insulation Class	B										
	Protection Class	IP20										
	Power Supply	220V ~ 50Hz										
	Quantity	1	1	1	1	1	1	2	2	2	2	
Coil	Type	Seamless copper tube mechanically bonded to aluminum hydrophilic fin										
	Max. Working Pressure MPa	1.6										
	Pipe Connection	Rc3/4 (Taper Pipe Female Threaded)										
Water Flow Rate m³/h	Cooling Mode m³/h	0.39	0.63	0.73	0.86	1.04	1.17	1.39	1.65	1.90	2.23	
	Heating Mode m³/h	0.21	0.29	0.33	0.42	0.47	0.55	0.66	0.72	0.88	1.06	
Water Resistance	Cooling Mode kPa	25	25	30	30	40	40	40	40	40	50	
	Heating Mode kPa	10	15	20	30	20	20	30	40	40	50	
Condensate Drain Pan	Pipe Connection	Rc3/4 (Taper Pipe Male Threaded)										
Net Weight (AC) kg	Without plenum box kg	12.1	14	16.6	17.8	19.3	20.8	27.2	28.5	34	37.5	
	With plenum box kg	14.4	16.5	19.8	21	22.8	24.5	31.6	33.2	40	43.7	

Note:

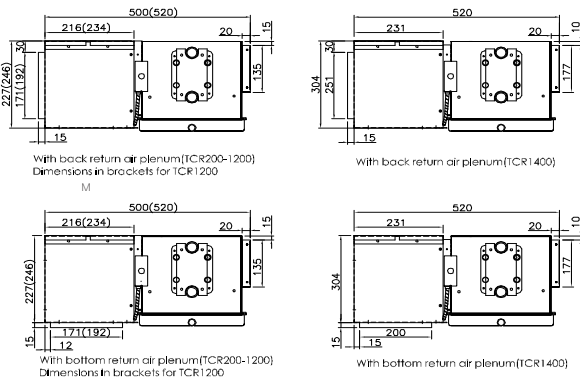
- Cooling capacity is based on the following:
  - Water temperature : 7°C (inlet)/12°C (outlet)
  - Air entering condition : 27°C DB/19.5°C WB
- Heating capacity is based on the following (with same water flow rate as cooling cycle):
  - Water temperature : 60°C (inlet)
  - Air entering condition : 21°C DB
- Low ESP means 0Pa with air vent & filter and 12Pa without air vent& filter.
- The air volume is tested under entering air condition of 20°C DB and dry coil condition.
- The sound pressure level is based on 11.5dB(A) hemi-anechoic room background noise.
- Can adjust left or right direction at site, but correct cooling & heating capacity must multiply correction factor 0.9 after adjustment.
- The manufacturer reserves the rights to make changes to the above specifications without prior notice.

# Dimension

## TCR Celling Concealed FCU (2 rows 3 rows)

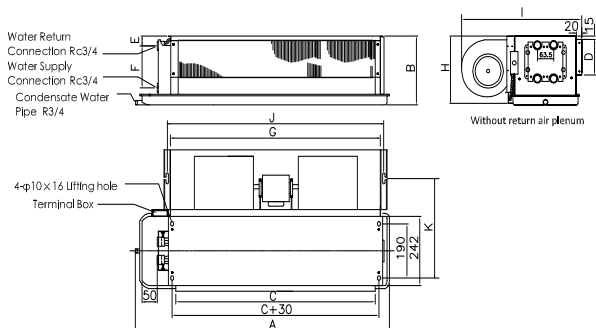


TCR	A	B	C	D	E	F	G	H	I	J	K	M	Motor Quantity	Fan Quantity
200	695	230	435	135	54	118	477	225	470	504	346	50	1	1
300	845	230	570	135	54	118	610	225	470	637	346	65	1	2
400	930	230	670	135	54	118	712	225	470	739	346	50	1	2
500	995	230	730	135	54	118	772	225	470	799	346	55	1	2
600	1085	230	825	135	54	118	867	225	470	894	346	50	1	2
700	1235	230	970	135	54	118	1012	225	470	1039	346	55	1	2
800	1530	230	1215	135	54	118	1257	225	470	1284	346	105	2	3
1000	1530	230	1255	135	54	118	1297	225	470	1324	346	65	2	4
1200	1795	250	1510	135	54	118	1552	240	490	1579	357	45	2	4
1400	1795	250	1510	135	54	118	1552	240	490	1579	357	45	2	4



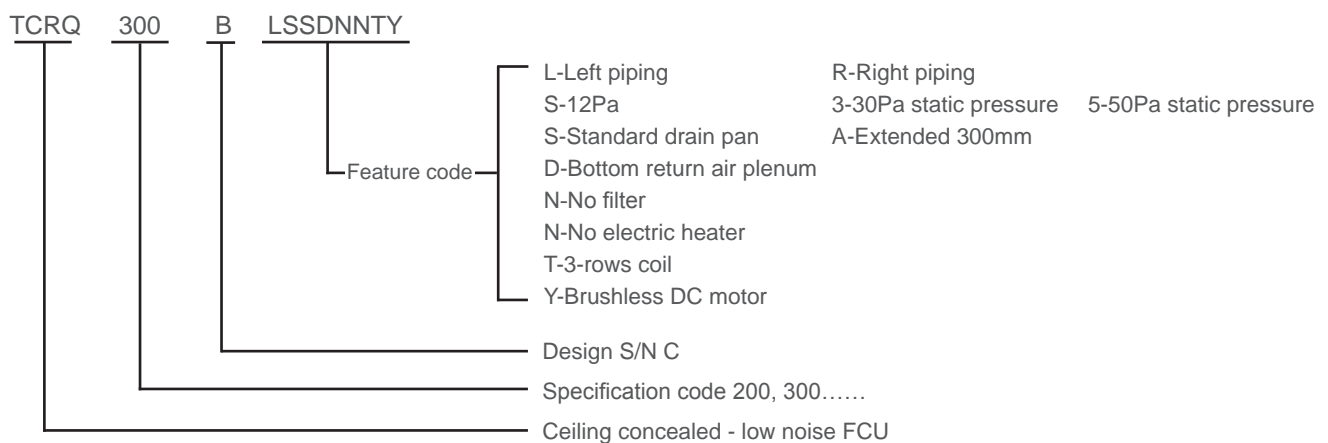
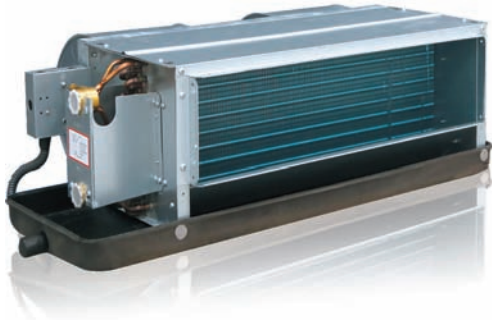
TCR	Length of return air plenum	Length of plenum wind-gap
200	483.6	422
300	615.6	557
400	725.6	657
500	775.6	717
600	870.6	812
700	1015.6	957
800	1260.6	1202
1000	1300.6	1242
1200	1555.6	1497
1400	1634	1596

## TCR Celling Concealed FCU (3+1 rows)

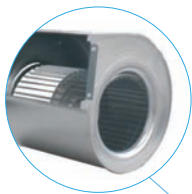


TCR	A	B	C	D	E	F	G	H	I	J	K	M	Motor Quantity	Fan Quantity
200	695	230	435	135	54	118	477	225	470	504	346	50	1	1
300	845	230	570	135	54	118	610	225	470	637	346	65	1	2
400	930	230	670	135	54	118	712	225	470	739	346	50	1	2
500	995	230	730	135	54	118	772	225	470	799	346	55	1	2
600	1085	230	825	135	54	118	867	225	470	894	346	50	1	2
700	1235	230	970	135	54	118	1012	225	470	1039	346	55	1	2
800	1530	230	1215	135	54	118	1257	225	470	1284	346	105	2	3
1000	1530	230	1255	135	54	118	1297	225	470	1324	346	65	2	4
1200	1795	250	1510	135	54	118	1552	240	490	1579	357	45	2	4
1400	1795	250	1510	135	54	118	1552	240	490	1579	357	45	2	4

# Ceiling Concealed Low Noise FCU - TCRQ



## 1. Low Noise



It adopts the stamping-formed wide impeller with imported hot dip galvanized steel sheet of high quality and the centrifugal (blade: forward-curved) fan of low speed, and features low noise, high efficiency and exquisite structure.



It adopts the high quality rolling bearings with low noises and little vibration delivered by an international famous brand, which do not need to be maintained and can be used for a long time.



It adopts the composite acoustical coating meeting environmental protection requirements. Anechoic layers with different interface shapes are provided between composite layers to improve the acoustic attenuation performance greatly.

## Main technologies

- TICA's independently patented micro-perforated panel diversion assembly
- Eco-friendly flame retardant and anechoic material used in the FCU cavity
- Combined with the high efficiency motor by matching the centrifugal (blade: forward-curved) fan

## 2. Brushless DC motor as optional



### High efficiency and energy saving

- Low heat radiation, efficiencies up to 75% (in contrast to the 30%-40% of conventional AC motor), average power consumptions equal to 50%-70% of AC motor.
- Optional solutions of three-stage speed regulation and stepless speed regulation; the air conditioner operates with a partial load in 90% of the time; under the stepless regulation mode, the motor speed is adjusted based on actual demand to save energy and substantially increase the energy efficiency.

### Low noise to ensure comfort

- Adopts the PWM sine wave control technology to achieve low vibration and noise; driver carrier frequency above 15k to eliminate high frequency noise and special groove type design to reduce low frequency noise.
- The output torque satisfies the load application characteristics of unit and keeps the unit in a highly stable status.

### A wide range of applications, reliable and safe

- The LCD thermostat is stylish and can be used as a high-end thermostat in various types of TICA fan coils. The operating voltage is a globally applicable 90 VAC to 230 VAC. It is used to control the opening/closing of the pipeline system control components such as the fan coil pipeline valves to turn on/off the circulation media such as the cold and hot water sources of the pipeline, thus controlling regional temperature.

### Intelligent control

- The thermostat with the RS485 interface is optional. It supports the Modbus communication protocol and can be used for linkage with the building automation system to implement the centralized operation management of remote automatic control and monitoring.
- The elegant thermostat is provided with an LCD screen to realize perfect fusion with building decoration.

## 3. Ultra-low noise, quiet and comfortable

- It adopts the forward curved centrifugal fan of low speed, and features low noise, high efficiency and exquisite structure. The motors use imported corrugated washers and advanced damping rotors with low vibration and noise.
- Combined with the high efficiency motor and the forward curved centrifugal fan, the unit is able to run quietly, thus greatly improving comfort.
- The unit's noise level is far below the national standard, reaching the industry leading level.

## 4. Compact, light, flexible and elegant

- The unit is compact in structure, lightweight and elegant in its entirety. The installation space is about 6% less than that of the standard fan coil. The ultra-thin design can meet the maximum requirements such as the effective floor height of the house.
- The return air plenum is equipped, which is installed on site.

# Low Noise DC Brushless FCU

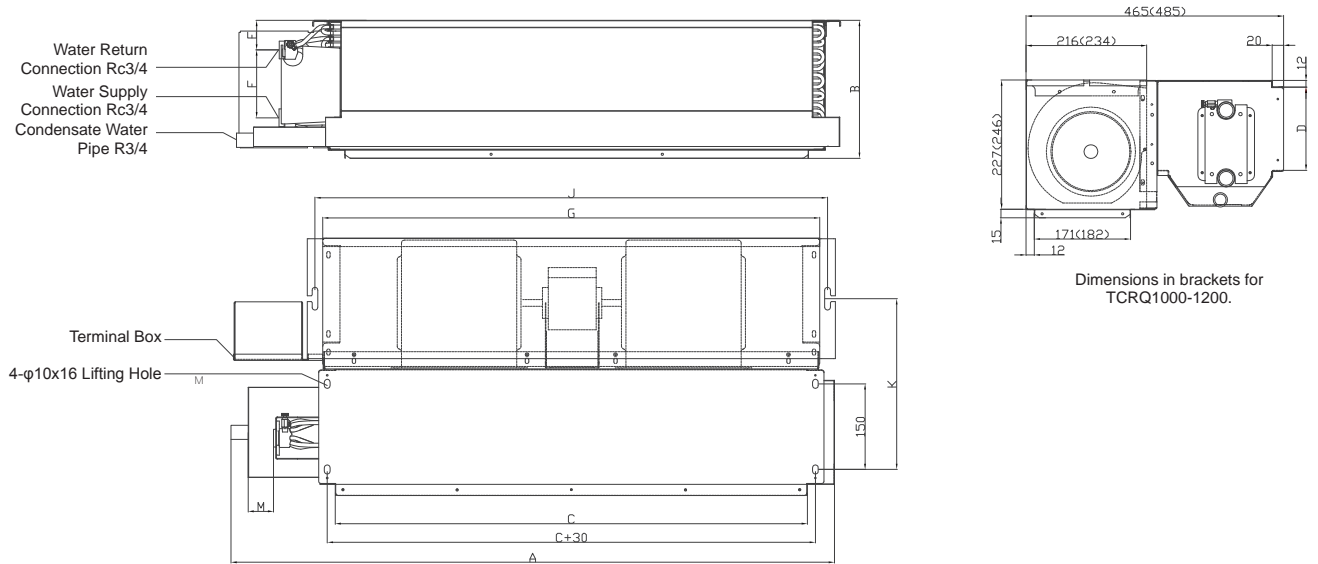
TCRQ		200C	300C	400C	500C	600C	700C	800C	1000C	1200C	
Air Flow m <sup>3</sup> /h	High	340	510	680	850	1020	1190	1360	1700	2040	
	Medium	270	380	510	640	765	890	1020	1275	1530	
	Low	190	255	340	425	510	695	680	850	1020	
Total Cooling Capacity W	High	2210	3200	4150	5000	5950	6600	8100	9100	11250	
	Medium	1990	2782	3570	4197	5200	5600	6882	8200	9613	
	Low	1635	2304	2950	3298	4200	4600	5749	6700	7403	
Sensible Cooling Capacity W	High	1590	2285	2880	3570	4200	4700	5880	6700	8260	
	Medium	1400	1920	2420	2930	3570	3900	4880	5700	6935	
	Low	1050	1555	1930	2210	2900	3200	3935	4500	5120	
Heating Capacity W		High	3500	5200	6500	7870	9800	10900	13570	14900	18800
Power Input W	Low Static Pressure (12 Pa)	High	16	17	24	34	47	47	54	72	99
		Medium	9	10	14	18	24	24	28	39	48
		Low	5	6	8	10	13	13	15	22	24
	30Pa static pressure	High	22	23	33	44	57	57	68	90	119
		Medium	12	13	17	22	29	29	34	47	57
		Low	7	8	9	12	14	15	18	25	27
	50Pa static pressure	High	30	31	42	53	68	71	87	111	143
		Medium	15	16	22	27	33	35	42	55	88
		Low	8	9	11	13	16	17	20	28	38
Sound Level dB(A)	Low Static Pressure (12 Pa)	High	32	33	37	40	43	43	43	45	47
		Medium	24	25	29	30	35	35	36	38	40
		Low	20	21	22	25	28	28	28	28	30
	30Pa static pressure	High	37	38	40	43.5	45	45	45.5	47	49
		Medium	29	30	32	34.5	36	36	36.6	40	42
		Low	21	22	22	27	30	30	30	30	32
	50Pa static pressure	High	40	41.5	43	45.5	47	47	48	49	51
		Medium	33	34	36	37	39	39	40	42	45
		Low	24	25	27	29	32	32	32	32	36
Fan	Type	Forward-curved multi-blade double inlet centrifugal fan									
	Qty	2	2	2	2	2	3	3	4	4	
Motor	Type	Brushless DC motor (built-in AC-DC conversion module)									
	Insulation Class	Level B									
	Protection Class	IP41									
	Power Supply	220V-50Hz									
	Qty	1	1	1	1	1	1	1	2	2	
Heat Exchanger	Type	Efficient double-flanged aluminum fins and copper tubes, expanded into one									
	Max. Working Pressure MPa	1.6									
	Pipe Connection	Rc3/4 (Taper Pipe Female Threaded)									
	Water Flow Rate m <sup>3</sup> /h	0.58	0.6	0.71	0.83	1.02	1.1	1.36	1.61	1.91	
	Water Resistance kPa	30	30	30	30	40	40	40	40	40	
Condensate Drain Pan	Pipe Connection	Rc3/4 (Taper Pipe Male Threaded)									
Dimensions	Length	mm	890			1050		1430		1730	
	Width	mm	465			465		465		485	
	Height	mm	242			242		242		262	
Net weight		15	15	15	17	17	24	24	32	32	

Note:

- Cooling capacity is based on the following:
  - Water temperature: 7°C(inlet)/12°C(outlet)
  - Air entering condition: 27°C DB/19.5°C WB
- Heating capacity is based on the following (with same water flow rate as cooling cycle):
  - Water temperature: 60°C(inlet)
  - Air entering condition: 21°C DB
- The air flow is tested under air entering condition of 20°C DB and dry coil condition.
- The sound pressure level is based on 11.5 dB(A) hemi-anechoic room background noise.
- The manufacturer reserves the rights to make changes to the above specifications without prior notice.

# Dimension

## Low Noise DC Brushless FCU

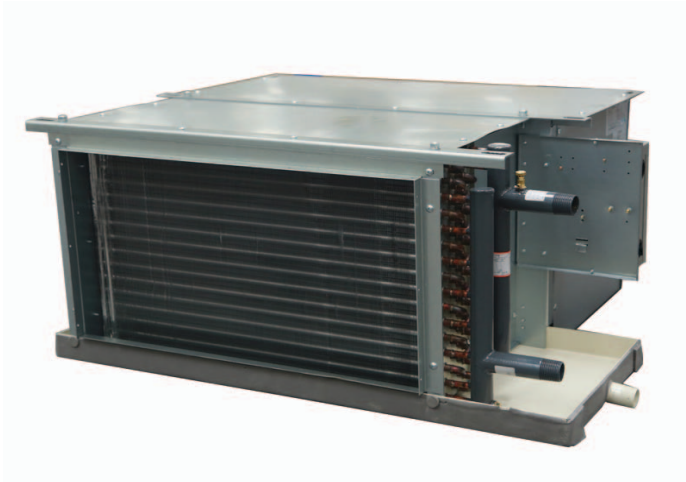


TCRQ	A	B	C	D	E	F	G	J	K	M
200C	890	242	668	150	54	118	712	739	300	45
300C	890	242	665	150	54	118	712	739	300	45
400C	890	242	665	150	54	118	712	739	300	45
500C	1050	242	825	150	54	118	967	894	300	45
600C	1050	242	825	150	54	118	967	894	300	45
700C	1430	242	1205	150	54	118	1257	1284	300	45
800C	1430	242	1205	150	54	118	1257	1284	300	45
1000C	1730	261	1505	150	54	118	1552	1579	312	45
1200C	1730	261	1505	150	54	118	1552	1579	312	45

**Note:**

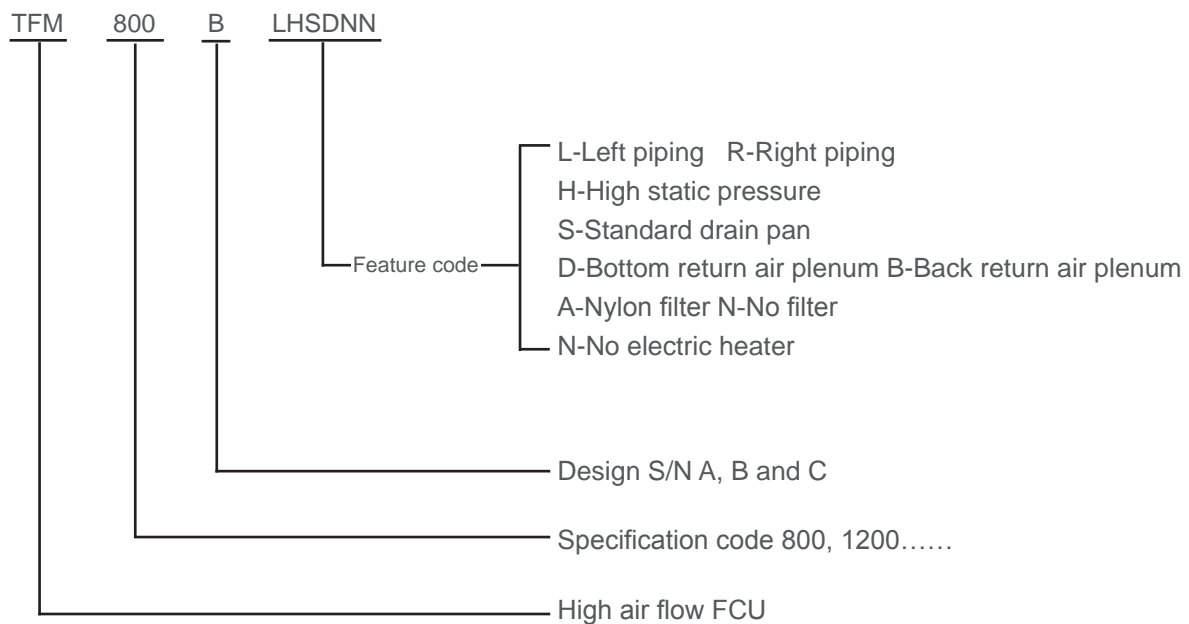
1. The unit with return air plenum does not have a return air flange, with other dimensions remaining the same.
2. When vibration-absorbing lifting hooks are used for lifting the unit, tell the factory about it.

# Ceiling Concealed High Pressure FCU - TFM



## Characteristics:

- Large air flow, range from 655CMH to 6200CMH
- High External static pressure, up to 180Pa.



## TFM Ceiling Concealed High Pressure FCU

Model TFM		800B	1000B	1200B	1600B	1800B	2000B	3000B
Rated Air Flow (m <sup>3</sup> /h)	High	1265	1510	1925	2490	2945	3880	5500
	Medium	1015	1215	1540	1990	2360	3100	4395
	Low	815	970	1230	1595	1890	2485	3520
Air Outlet Static Pressure (Pa)	High	130	130	130	130	130	130	130
Cooling Capacity (kW)	High	8.29	9.87	12.04	15.93	19.11	24.26	34.41
	Medium	6.64	7.90	9.63	12.75	15.29	19.39	27.51
	Low	5.30	6.31	7.70	10.20	12.22	15.53	22.01
Sensible Cooling Capacity (kW)	High	6.11	7.39	8.75	11.87	14.28	17.62	25.00
	Medium	4.89	5.91	6.99	9.51	11.42	14.09	19.98
	Low	3.92	4.73	5.60	7.61	9.14	11.29	15.99
Heating Capacity (kW)	High	12.37	15.19	19.60	24.56	28.66	39.47	55.99
	Medium	9.89	12.51	15.68	19.65	22.93	31.58	44.79
	Low	7.91	9.72	12.54	15.73	18.34	25.29	35.84
Power Input (W)	High	280	370	600	700	750	1200	1800
Sound Pressure Level (dB(A))	High	62	63	64	63	64.5	65	66
Fan	Type	Forward-curved multi-blade centrifugal fan (galvanized steel sheet)						
	Qty	1	1	1	2	2	2	3
Motor	Type	Single-phase capacitor motor						
	Insulation Class	B						
	Power Supply	220V-50Hz						
	Qty	1	1	1	1	2	2	3
Heat Exchanger	Structure Type	Aluminum-finned and copper-tube, mechanical expanding						
	Maximum Operating Pressure (MPa)	1.6MPa						
	Water Inlet/Outlet Pipe Diameter	R1 (taper pipe male threaded)					R1 <sup>1/2</sup> (taper pipe male threaded)	
	Water Flow (m <sup>3</sup> /h)	1.60	1.88	2.39	3.08	3.65	4.50	6.16
Water Pressure Drop (kPa)		6	14	25	20	25	35	45
Drain pan	Condensate Water Pipe Diameter	R1 (taper pipe male threaded)						
Dimensions	Length (mm)	860	860	960	1110	1260	1560	2010
	Width (mm)	770	770	770	770	770	770	770
	Height (mm)	430	430	430	430	430	430	430
Net Weight (kg)		50	50	56	65	76	94	126

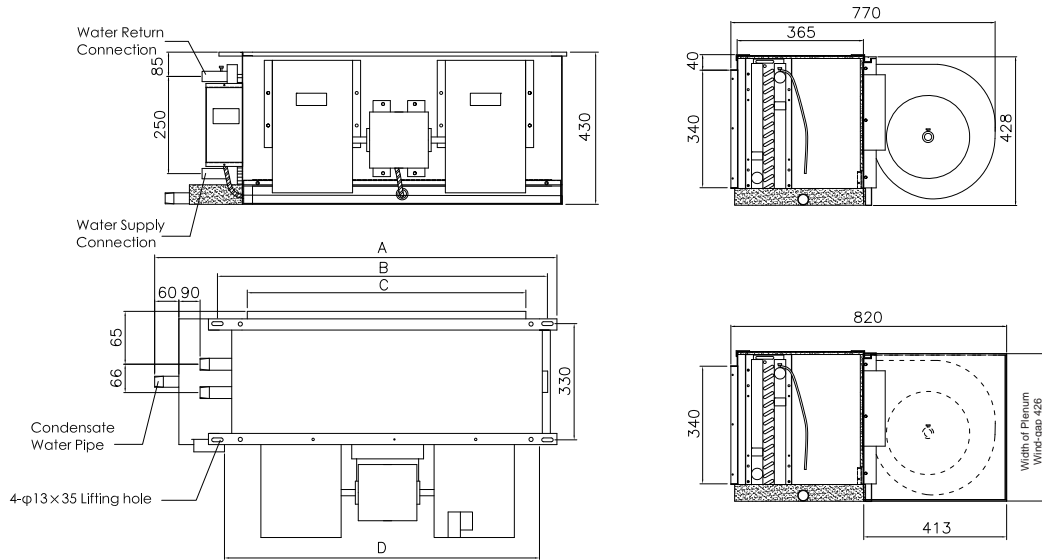
### Note:

- Cooling capacity test conditions: supply water and return water temperatures 7/12°C; air return conditions: the dry/wet bulb temperature of air inlet is 27°C;
- Heating capacity test conditions: supply water is 60°C, water quantity being the same as during cooling capacity test; air return conditions: the dry bulb temperature of air inlet is 21°C;
- The air flow in the table is obtained when the unit is running in dry state and the dry bulb temperature is 20°C;
- When FCU residual pressure consumption is 80Pa, moisture might occur;
- Unless specified otherwise, the unit comes with the following return air plenum;
- The sound pressure level in the table is obtained in a semi-anechoic chamber with noise at 11.5dB(A);
- The specifications may be changed due to product improvement without a prior notice. The parameters indicated on the unit nameplate should prevail;
- If thermostat or three-speed switch is required, please consult the factory.



# Dimension

## Ceiling Concealed - High Pressure FCU



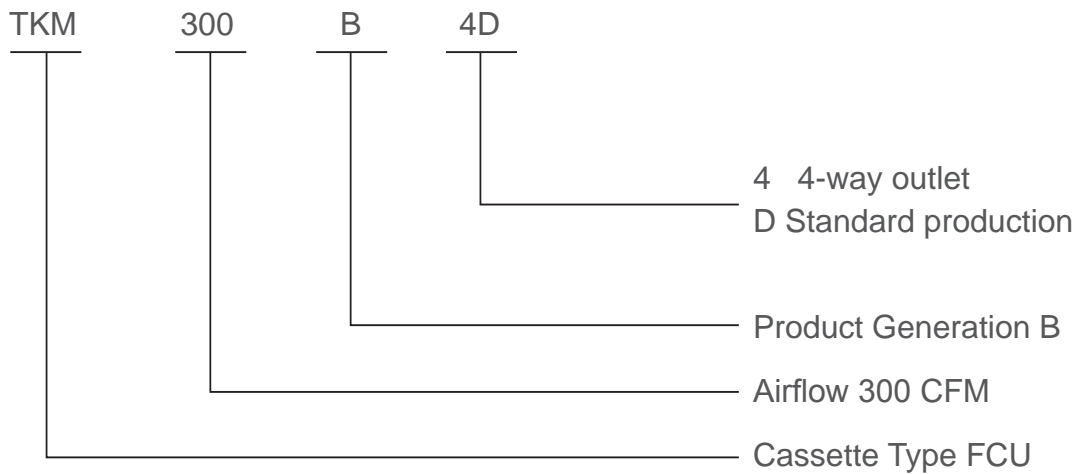
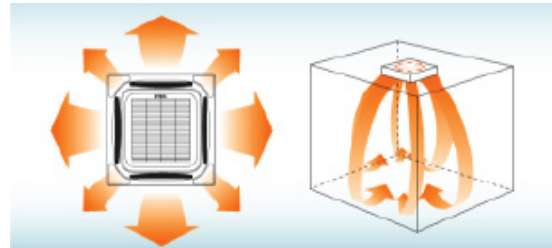
Model TFM	A	B	C	D	Inlet/outlet Pipe	Condensate Water Pipe	Motor Quantity (S/H)	Fan Quantity
800B	860	683	530	653	R1	R1	1/1	1
1000B	860	683	530	653	R1	R1	1/1	1
1200B	960	783	630	653	R1	R1	1/1	1
1600B	1110	953	800	753	R1	R1	1/1	2
1800B	1260	1083	930	923	R1	R1	1/2	2
2000B	1560	1403	1250	1373	R1 <sup>1/2</sup>	R1	2/2	2
3000B	2010	1853	1700	1823	R1 <sup>1/2</sup>	R1	3/3	3

## Cassette Type FCU - TKM



### Characteristics:

- 360° air outlet, no blind spot.
- Low noise  
The quality heat insulating and anechoic material is used to minimize the unit vibration and noise. The 3D aerofoil-type blade fan with a large diameter is used to ensure low speed and low noise.
- Compact design, built-in drain pump



# TKM Cassette Type FCU

Model TKM		300B4D	400B4D	500B4D	600B4D	800B4D	1000B4D	1200B4D
Air Flow m <sup>3</sup> /h	High	510	680	820	1020	1360	1700	2040
	Medium	420	560	630	870	1150	1450	1750
	Low	350	460	500	715	950	1190	1430
Total Cooling Capacity W	High	2700	3600	4300	6000	8000	9500	10800
	Medium	2410	3100	3530	5150	6655	8285	9430
	Low	2140	2750	3010	4530	5860	6950	8200
Heating Capacity W	High	4050	5400	6450	10000	12500	15500	17000
Motor	Type	Split-capacitor motor with ball bearing						
	Insulation Class	B						
	Power Supply	220V-50Hz						
	Quantity	1						
	Rated Power Input	56	65	80	85	108	144	189
Coil	Type	Seamless copper tube mechanically bonded to aluminum hydrophilic fin						
	Max.Working Pressure Mpa	1.6						
	Inlet/outlet Pipe	Rc3/4 (Taper Pipe Female Threaded)						
	Condensing Pipe	Φ20						
	Water Flow Rate m <sup>3</sup> /h	0.48	0.64	0.94	1.1	1.42	1.7	1.85
	Water Pressure Drop kPa	30	30	30	35	40	40	50
Sound Pressure Level (High ) dB(A)	39	41	43	40	41	45	48	
Body Dimension (Without Panel)	Length(mm)	570	570	570	840	840	840	840
	Width(mm)	570	570	570	840	840	840	840
	Height(mm)	250	250	290	230	310	310	310
Panel Dimension	Length(mm)	650	650	650	950	950	950	950
	Width(mm)	650	650	650	950	950	950	950
Net Weight kg	23	23	28	29	34	34	35	

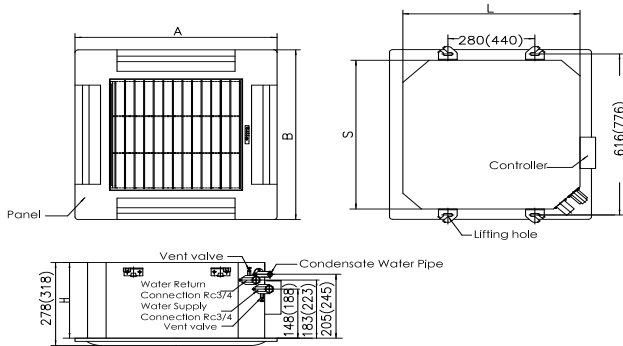
**Note:**

- Cooling capacity is based on the following:
  - Water temperature: 7°C (inlet)/12°C (outlet)
  - Air entering condition: 27°C DB/19.5°C WB
- Heating capacity is based on the following (with same water flow rate as cooling cycle):
  - Water temperature: 60°C (inlet)
  - Air entering condition: 21°C DB
- Air volume above is tested under units with nylon filter.
- The air volume is tested under entering air condition of 20°C DB and dry coil condition.
- The sound pressure level is based on 11.5dB(A) hemi-anechoic room background noise.
- Units supply blowing guide plate drive mechanism and remote control devices and pump.
- The manufacturer reserves the rights to make changes to the above specifications without prior notice.

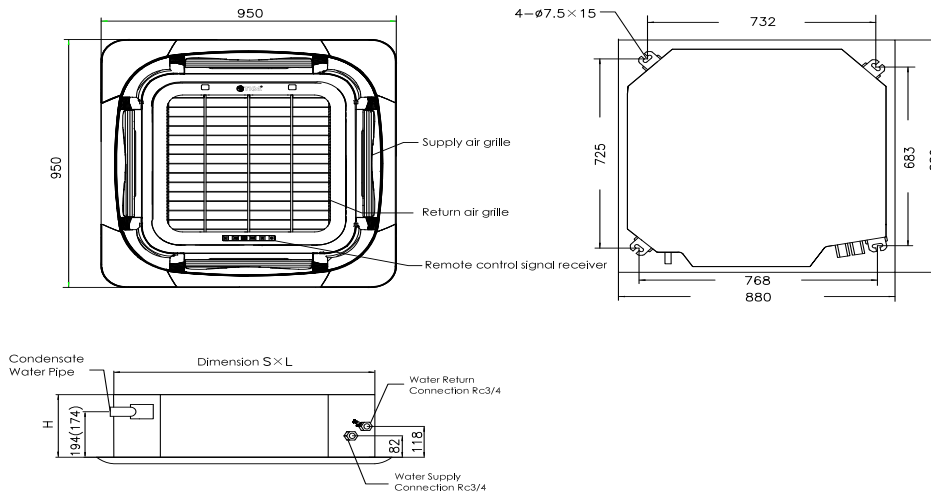
# Dimension

## Cassette Type FCU

### TKM300-500(Dimensions in brackets for TKM500)



### TKM600-1200(Dimensions in brackets for TKM600)



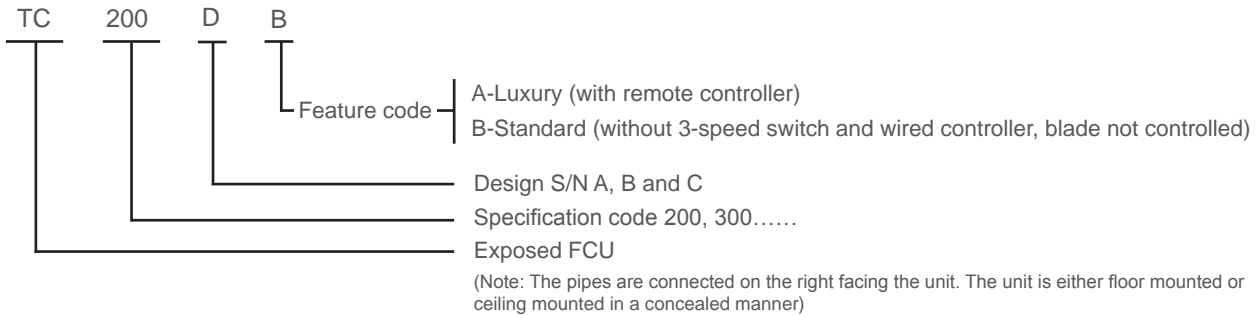
TKM	TKM300	TKM400	TKM500	TKM600	TKM800	TKM 1000	TKM 1200
Panel Dimesion ( A x B )	650x650	650x650	850x850	950x950	950x950	950x950	950x950
Unit Dimesion ( S x L x H )	570x570x250	570x570x250	730x730x290	840x840x230	840x840x310	840x840x310	840x840x310

# Ceiling & Floor Exposed FCU - TC



## Characteristics:

- Flexible installation, ceiling or floor mounted
- Automatic horizontal and vertical air flow
- One side access hole ,easy for maintenance



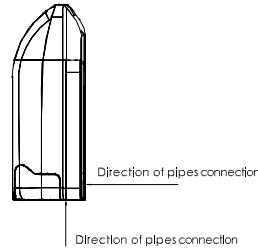
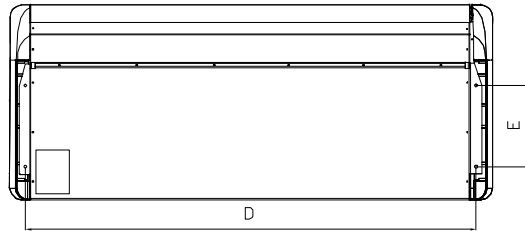
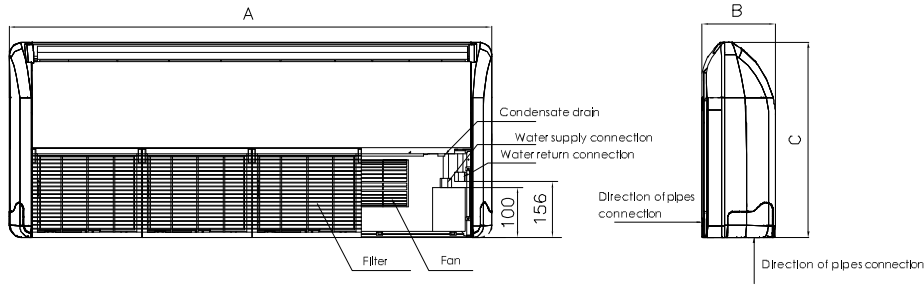
TC		200D	300D	400D	500D	600D	800D	1000D	1200D	1400D
Air Flow m <sup>3</sup> /h	High	350	520	680	850	1030	1360	1700	2040	2380
	Medium	280	440	560	700	870	1255	1450	1830	2100
	Low	230	350	410	570	740	1080	1160	1500	1650
Total Cooling Capacity W	High	1970	2850	3600	4300	5400	6600	8400	9600	10500
	Medium	1675	2400	3060	3655	4590	5610	7140	8160	8900
	Low	1380	1995	2520	3010	3780	4620	5880	6720	7350
Heating Capacity W	High	3200	4500	5600	6800	8600	10500	13500	15000	16800
	Medium	2680	3825	4760	5780	7310	8900	11500	12750	14280
	Low	2200	3150	3920	4760	6020	7350	9450	10500	11760
Fan	Type	Centrifugal (Blade:Forward-Curved)								
	Quantity	2	2	2	2	3	3	4	4	4
Power Supply		220V-50Hz								
Motor Rated Power Input(W)		37	52	62	76	106	134	165	189	228
Coil	Type	Seamless copper tube mechanically bonded to aluminum fin								
	Max.Working Pressure MPa	1.6								
	Pipe Connection	Rc3/4(Taper Pipe Female Threaded)								
	Condensate Pipe	Φ25								
	Water Flow Rate m <sup>3</sup> /h	0.34	0.49	0.62	0.74	0.89	1.12	1.44	1.65	1.81
	Water Pressure Drop kPa	12	14	22	26	15	20	20	24	29
Weight	(Without return air plenum) kg	25	25	25	25	40	40	45	45	45
Dimension (Without return air plenum)	Length(mm)	905	905	905	905	1288	1288	1672	1672	1672
	Width(mm)	243	243	243	243	243	243	243	243	243
	Height(mm)	673	673	673	673	673	673	673	673	673
Sound Pressure Level (High ) dB(A)		37	39	41	43	45	46	48	50	52

### Note:

1. Cooling capacity is based on the following: a) Water temperature: 7°C(inlet)/12°C(outlet) b) Air entering condition:27°C DB/19.5°C WB
2. Heating capacity is based on the following(with same water flow rate as cooling cycle): a) Water temperature: 60°C(inlet) b) Air entering condition:21°C DB
3. The air volume is tested under entering air condition of 20°C DB and dry coil condition.
4. TCXXXDB series do not supply three speeds switch and wired controller is optional accessory.TCXXXDA series do supply remote controller.
5. Thermostat is optional which have three speed levels and can be connected to electric valve and adjust temperature.
6. The sound pressure level is based on 11.5dB(A) hemi-anechoic room background noise.
7. The manufacturer reserves the rights to make changes to the above specifications without prior notice.
8. The unit can be in vertical or ceiling installation and connect pipe at right direction when in front of the unit.
9. The manufacturer reserves the rights to make changes to the above specifications without prior notice.

# Dimension

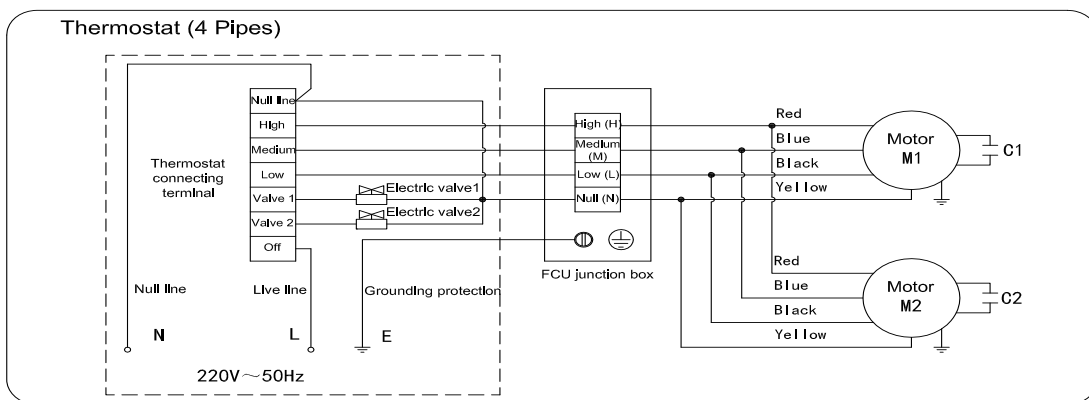
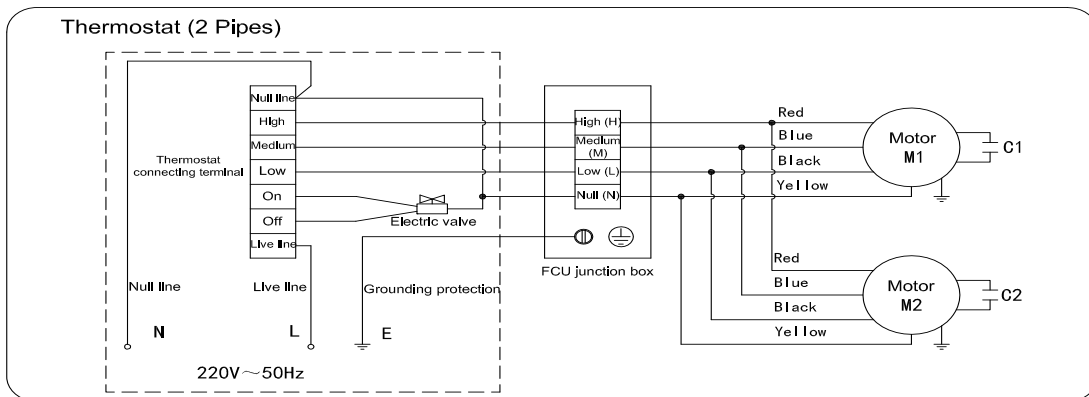
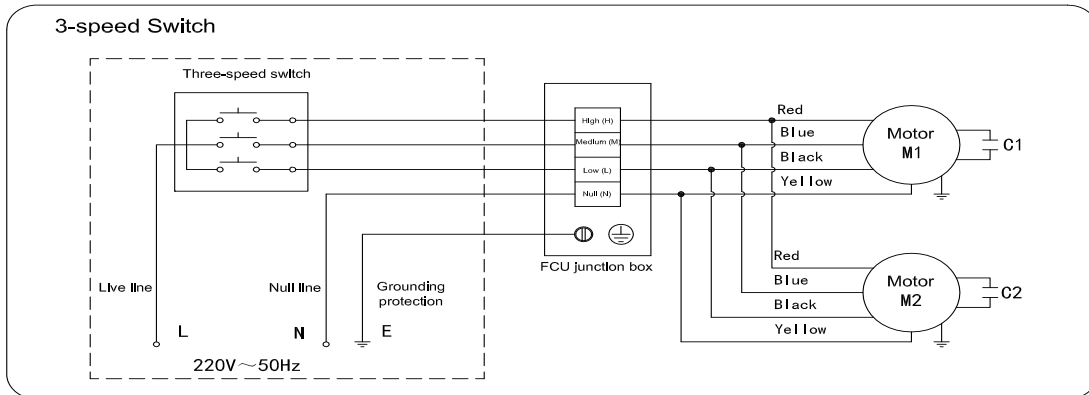
## Floor Ceiling Type FCU



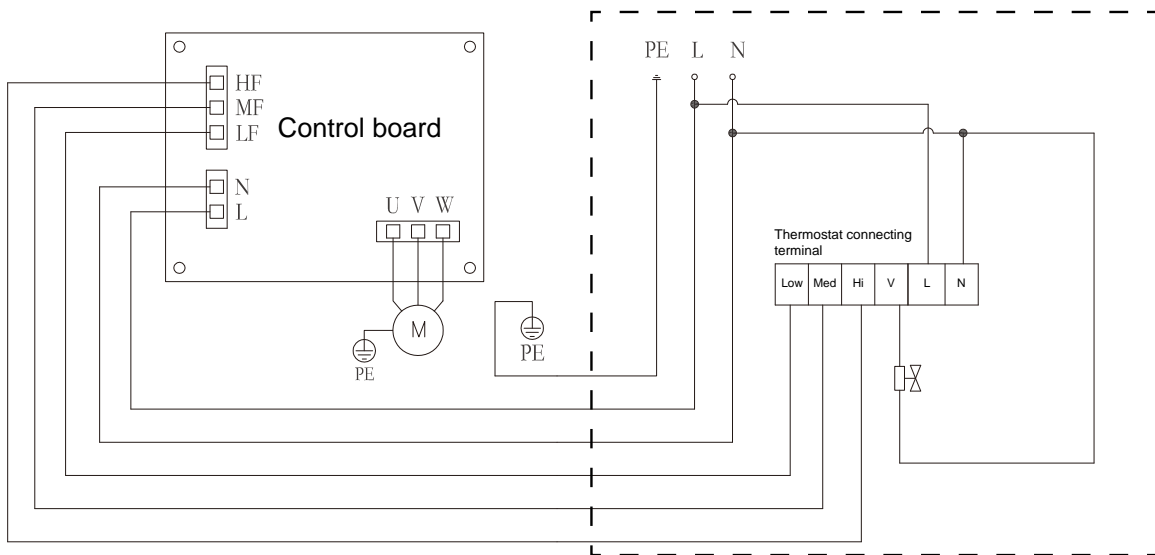
TC	200	300	400	500	600	800	1000	1200	1400
Dimension	905x243x673				1288x243x637		1672x243x673		
Steeve Pitch	801x280				1184x280		1569x280		
Fan Quantity	2	2	2	2	3	3	4	4	4

# Wiring Diagrams

## AC Motor Wiring Diagram (applicable to TCR and TFM series)



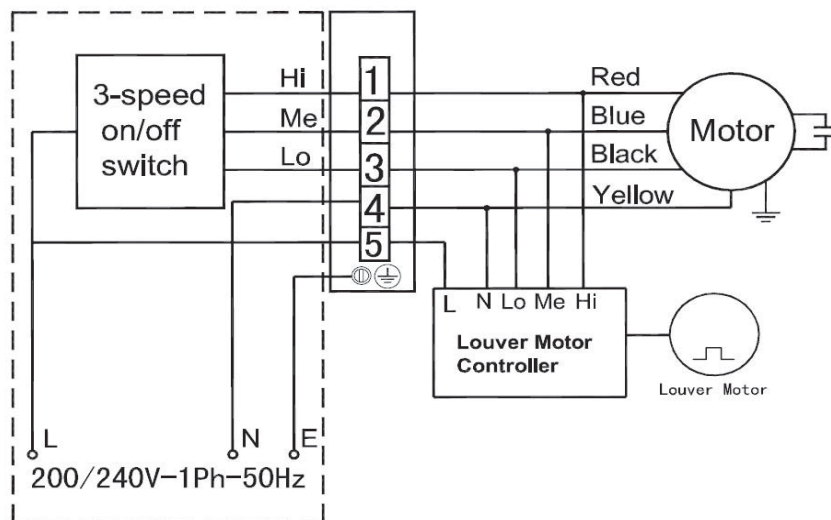
## Brushless DC Motor Wiring Diagram (applicable to TCRQ series)



### ★ Remarks

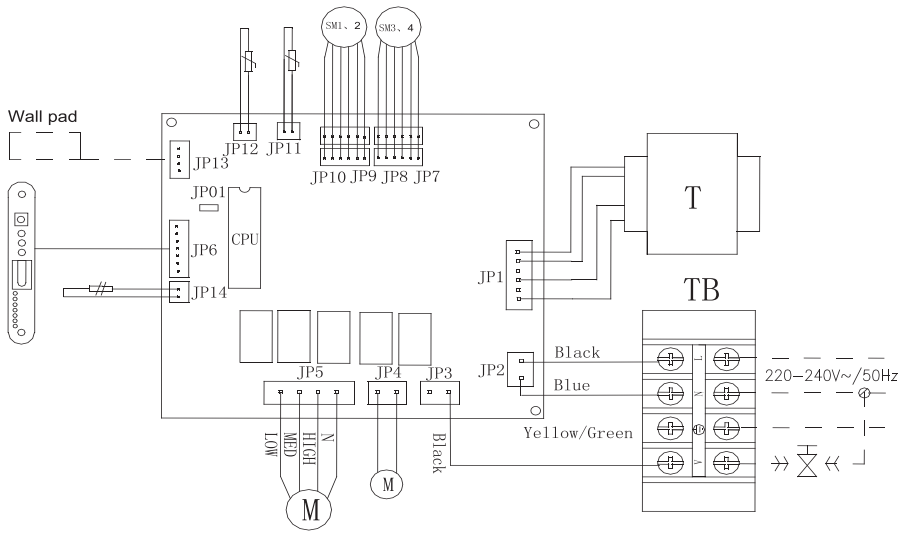
1. Wiring to be implemented by the customer is indicated in the dashed frame. If the three-speed switch or thermostat is required, please specify when placing an order.
2. The TFM three-speed switch must be able to bear the maximum operating current of the unit or the AC contactor to control the unit.
3. The unit connection must be correct; otherwise, the motor may be burnt out.
4. The voltage, frequency, and phase number of the power supply must be consistent with the unit requirements, and the supply voltage deviation should not exceed 10% of the rated voltage.
5. Disconnect the power supply before maintenance work to prevent electric shock.
6. For the TCR series, only the 800-1400 unit is provided with the motor M2.
7. The electric valve should be matched with the thermostat for use; otherwise, the connection of electric valve may be incorrect. The two-way valve or three-way valve of two-wire system needs to be selected for the 4 pipes FCU.
8. Electric valve 1 is a cold water valve, and electric valve 2 is a hot water valve. No hot water valve is provided for the 2 pipes FCU.

### Model: TC



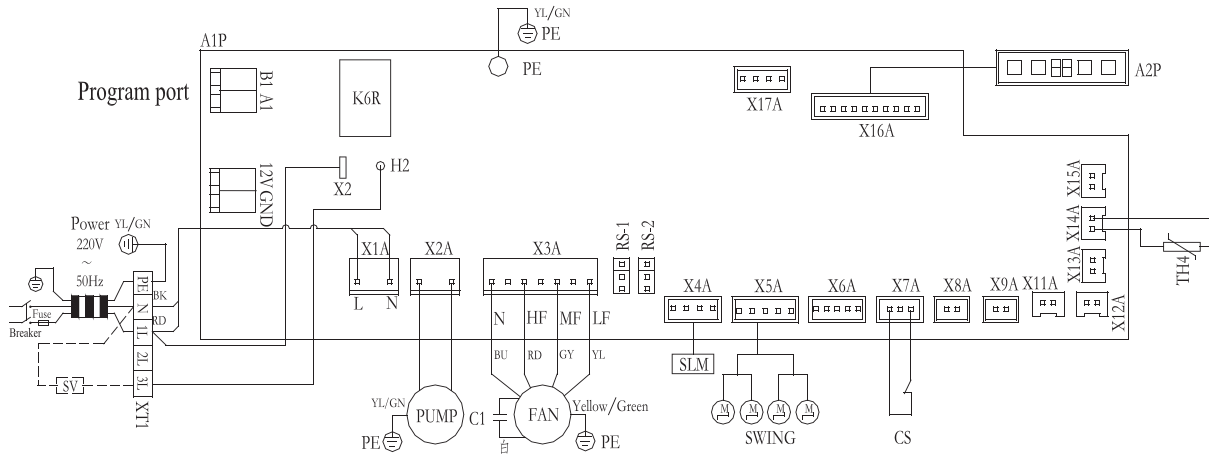


**Model: TKM300B4D-500B4D**



- Legend:**  
 JP01---Open is with valve  
           Short is without valve  
 JP1---Transformer  
 JP2---Power supply  
 JP3---2-way valve  
 JP4---Drainage pump  
 JP5---Fan motor  
 JP6---Remote receiver  
 JP7---Stepping motor  
 JP8---Stepping motor  
 JP9---Stepping motor  
 JP10---Stepping motor  
 JP11---Room TEMP. sensor  
 JP12---Indoor coil TEMP. sens  
 JP13---Wall pad  
 JP14---Float switch  
 \_\_\_\_\_ FACTORY WIRING  
 - - - - - FIELD WIRING

**Model: TKM600-1200B4D**



Symbol	A1P	A2P	XT1	PUMP	FAN	SWING	C1	TH4	CS	SLM	SV
Name	Controller	Receiving display circuit board	Terminal block	Pump	Fan motor	Swing motor	Capacitor	Ambient temperature	Water level switch	Remote control	Solenoid valve

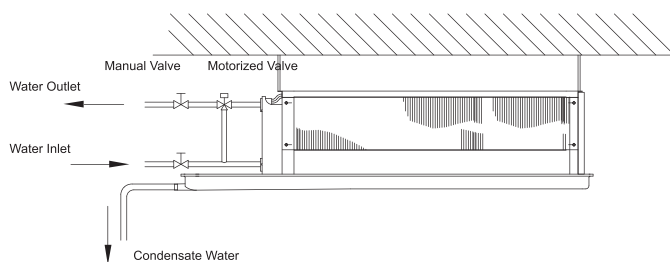
**Note:**

- 1 filled wiring, connector
- 2 Wiring only allows copper wire
- 3 Only provides the solenoid valve control port, except solenoid valve

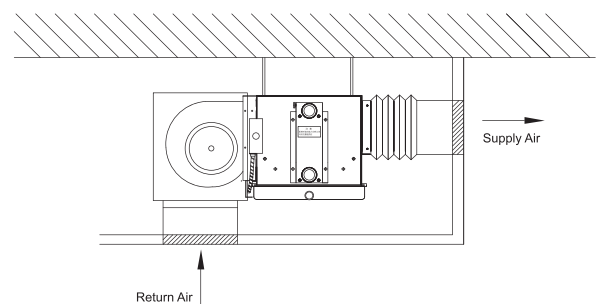
## Installation

- Handle the unit with care and never handle it by holding its impeller or the volute. Contact the distributor for repair or replacement if it is found, before installation, that the unit is damaged seriously, the volute or the condensate drain pan is deformed or that the motor or the fan loosens.
- When installing the unit, ensure that it is level or the drain side is lower than the other side by 3 ~ 5mm to make the condensate drain pan function smoothly; make sure that the unit only bears its dead load (free from any external load like air ducts and water pipes); reserve sufficient low-maintenance space at the installation position.
- Install a filter screen at the return air inlet to prevent dust blocking the fins of the heat exchanger and ensure its heat-transfer capacity.
- Adopt the top-in and bottom-out pipe connecting system in which the inlet and outlet pipes and recommended to be flexible joints. Do not use excessive torque when connecting pipes, or the heat exchanger may be damaged. Provide thermal insulation measures for the inlet and outlet pipes Seal the threaded connections with tetrafluoroethylene tapes. Keep the drain pipe at a sufficiently low gradient.
- Before initial operation and cold-heat switchover, open the manual air vent valve installed on the outlet pipe of the unit and close it after all air in the coil pipe and the pipeline is vented, or the heat-transfer effect may be not satisfactory Note that the water temperature for cooling in summer and heating in winter shall not be lower than 6°C and greater than 65°C respectively and that clean and softened water is required.
- Provide a single-phase 220V power supply for the unit, with its fluctuation within  $\pm 10\%$ . Carry out wiring against the circuit diagram and do not make any two gears (high, medium and low gears in total) served by the same wire to prevent the motor being burned out. When installing the unit, connect the grounding nut on the housing of the unit with the protective ground system. Never make different models of units share the same three-gear switch, or the motor may also be burned out.
- Clean the heat exchanger period carefully to ensure its satisfactory heat-transfer performance. Clean the filter screen regularly to ensure smooth air return. Never operate the unit for long time unless the filter screen is provided. Fill the coil pipe with water when the unit is shut down for long time, to reduce corrosion of pipes. Take antifreezing measures during installation commissioning and long-time shutdown of the unit in winter, to prevent the coil pipe and water pipe bursting.
- For condensation which may occur on the surface of the unit when chilled water enter the unit but the fan fails to operate, realize interlocking between the electrically operated valve and the temperature detect switch or provide the chilled water bypass; otherwise, manually closing the water inlet valve is the sole solution.
- Make sure that the maintenance of the unit shall be earned out by professional staff who are familiar with the product.

Installation Diagram of Water Pipe



Installation Diagram of Air Duct



# Maintenance And Service

The air conditioning unit is an equipment and users are suggested to record the daily operation data of the equipment and to conduct regular maintenance and service.

## 1. Daily maintenance durina the equipment use:

Unit maintenance contents	Standard service cycle			Remarks
	Monthly	Quarterly	Half a year	
1. The inspection shall be inspected to confirm whether the power line (from the distribution cabinet to the unit) is loose or damaged.			★	
2. The inspection shall be conducted to confirm whether the condensate discharge is normal		★	●	Is the installation conducted accord ng to the pipe connection diagram? Is it dirty or blocked? Is the drainage smooth? Is there any overflow, etc. due to this?
3. The inspection shall be conducted to confirm whether there is abnormal noise during the operation of the unit.	★		●	For instance, sharp metal friction sound, whistlers, obvious clash and reasonance, significant electromagnetic noise (disgusting) and other abnormal noise.
4. The inspection shall be conducted to confirm whether it is necessary to clean the air side of heat exchanger (surface dust, sundries, etc.)	★	●		Space among fins are full of dust and there are sundries attached on the inlet side of the coil, etc.

## 2. We recommend the following maintenance and service methixis for the equipment which is not used for a long time

- ◆ In case that the unit does not operate for a long time or does not operate in winter, the power must be turned off and the water shall be discharged from the water system and the steam coil of the unit.
- ◆ If necessary, the maintenance and service may be conducted according to the pre-use maintenance and service methods of the equipment.

### Note:

1. User service: mandatory inspection -- ● recommended inspection -- ★
2. Vulnerable parts required for the service shall be purchased from TICA Air-Conditioning Co., Ltd.
3. The service methods apply to the cycle during normal use and the arrangement shall be made based on actual conditions in case of use in bad conditions.







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DISCLAIMER NOTE: Data provided herein are not binding and might change without prior notice.