

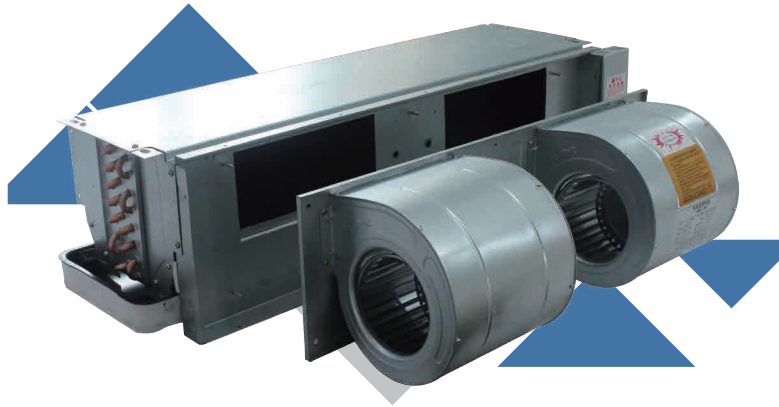
FT Series

Easy Maintenance & Energy Saving Fan Coil Unit

Save >50% ~ 80% Energy and Save 1-2 man hour for annual cleaning job



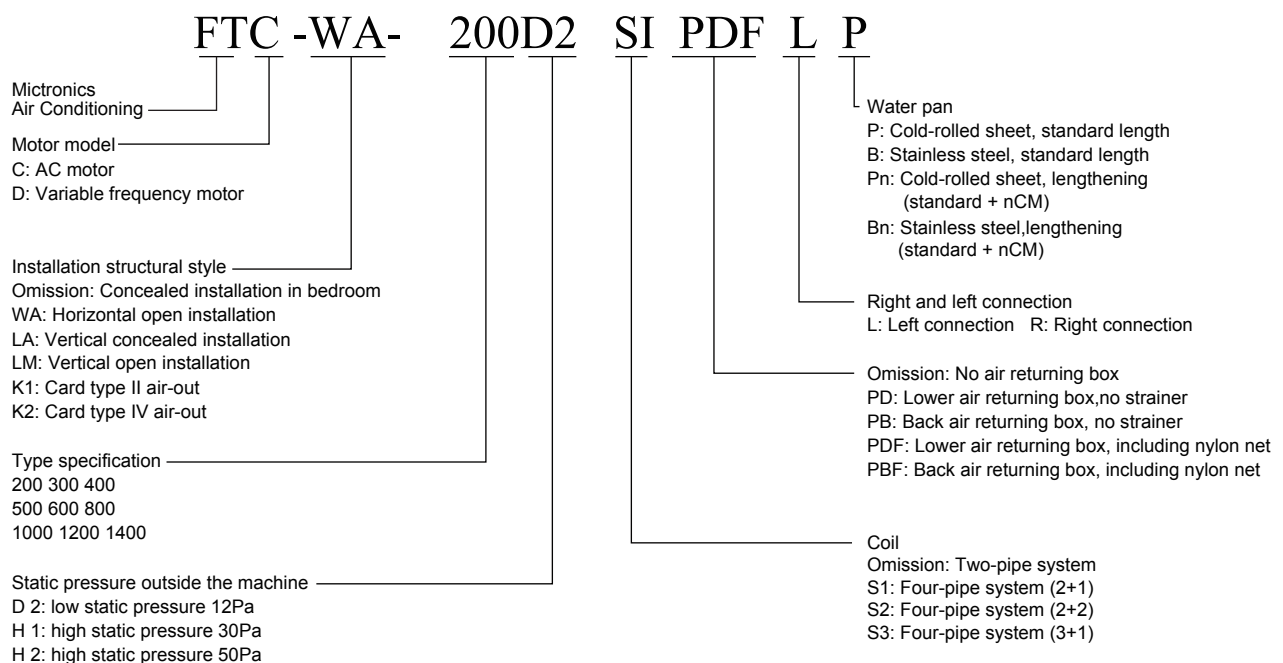
FT Series Easy Maintenance & Energy Saving Fan Coil Unit



Features: Product Design and Characteristics

- Classic Design with Easy Mounted Fan Desk,
- Easy Mounted Fan Desk saves man hour on annual cleaning, enable complete cleaning the FCU without dismantle the whole FCU down,
- Elongate the life expectancy of the FCU to over 15 years
- Full series FCU driven by high efficiency and proven reliable Integrated PMSM motor, help to save at least 50% energy when the FCU is operating at high speed and over 70% at low speed operation.
- Big blower, low speed operation, produces silent, energy saving for years of operation.

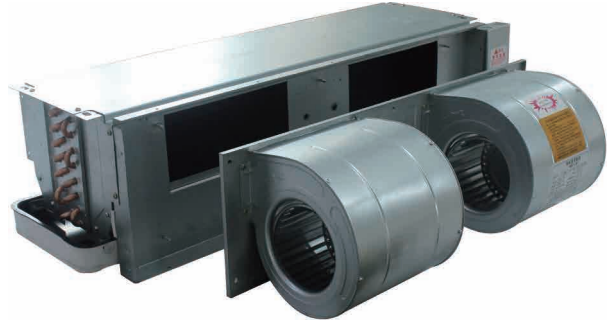
Product Nomenclature



FT Series Easy Maintenance & Energy Saving Fan Coil Unit

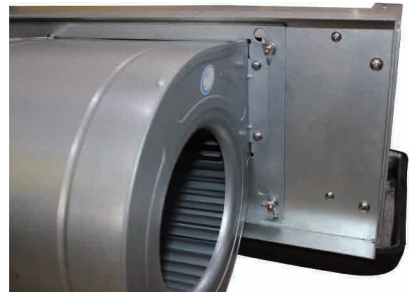
Feature 1:-- The whole FCU is precisely designed thoroughly:--

1.) The side plate, designed in a zigzag shape, enhancing high fixation strength, improves sealing and reduces air leakage.
2.) The condensation drain pan is fixed onto the FCU metallic body vertically; by which this mechanical improvement design helps to reduce damaging the structure of the condensation drain pan. It helps to elongate the life expectancy of the condensation drain pan.



Feature 2:-- Compact Structure:--

The height of the FCU is limited to <280mm; by which it is suitable to be installed in confined spaces.



Feature 3:-- High Quality Materials:--

The metallic body of the FCU is made of high quality galvanized steel sheet metal. Seamless copper tube is bonded to Aluminum Fin mechanically; by which the working pressure is tested to 2.5Mpa.

Feature 4:-- Easy Maintenance:

The fans and motor are mounted onto the same back plate Fan Desk. The Fan

Desk is mounted by 5-12 wind nuts and spring washer. It is easy for any technician to dismantle the Fan Desk to unscrew the wind nuts by pliers or even by hand. It helps to reduce maintenance time for annual cleaning job. The technician can completely clean the coil after having removed the Fan Desk, so as to complete restores the cooling capacity of the Fan Coil Unit. It reduces the man power from 2 to 3 hours to less than 1/2 hour per cleaning job.



Feature 5:-- Silent Operation:

The use of a bigger blower (160mm*200mm) in this newly designed FCU reduces motor speed (high speed: around 860 rpm, and low speed: around 500 rpm) but will achieve the same air flow; it is generally known that lower motor speed operation can reduce noise.

FT Series Easy Maintenance & Energy Saving Fan Coil Unit

Feature 6:-- Save Energy:

FT series Fan Coil Units are Driven by the Integrated PMSM motor. This PMSM motor has many proven job references of high efficiency, and reliability. It saves over 50% at HI speed, 60% at MID Speed, and >70% at low speed when compares to traditional PSC AC motor.




Feature 7:-- Safety features:

The motor driver has build-in over current protection; by which if the blower is blocked and the motor is being stopped, the protection circuit will cut off the power supplied to the motor, prevent the motor being burn out. The motor also has a build-in 105°C thermo ON/OFF switch to enhance thermo protection.

Feature 8:-- Reduce Heat Loss, elongate bearing life

Feature 6: Reduce heat loss, elongate bearing life

The High efficiency mFCS Integrates PMSM motor produces much less heat when compared to conventional PSC AC motor. The life expectancy of the motor bearing is elongated; hence, the time line for replacement of bearing will be extended from 4 years to 8 years. When compared to the AC motor, it reduces heat loss of 95% and 58% at low and high speeds operation respectively. The heat generated by the motor will become a heat load to the chiller system and causes wastage. The Integrated PMSM motor reduces a lot of heat load to the chiller system.



Feature 9:-- Wide Adaptability:--

- Since the Integrated PMSM motor has three speed fine tune buttons, user can change the motor speed on HI. MID. LOW in order to adopt to different Static Pressure; e.g. PA12. PA30. PA50 on the same FCU, unlike the AC motor, the user do not need to change the motor for different Static Pressure.

  		No: Q16-W1426	
佛山市质量计量监督检测中心 检 验 报 告			
型号: GR-CM049-01A10A10-B		第 4 页 共 1 页	
产品名称	风速计	生产日期/批号	_____
规格型号	FF022 RMCM3-FF02型, 220V, 50Hz	号	_____
商标、等级	_____	样品编号	_____
委托单位	美亚集团 (台山) 有限公司	检验类别	委托检验
委托单位地址	台山台城新大里254号	样品数量/送样方式	6台/自送样
生产单位	美亚集团 (台山) 有限公司	接收日期	2016年07月29日
生产单位地址	台山台城新大里254号	接样人	李宇平
(委托方签字)	_____	检验日期	2016年7月30日至 2016年08月17日
样品名称	风速计		
检测标准	GB/T 19321-2003 《风机转速测量》		
检验结果	合格, 所检项目符合规定。		
备 注	1. 本报告只针对样品负责; 2. 环境温度: 23℃~27℃; 相对湿度: 50%~70%。		
			
检测: 梁志江 (检测主管) 审核: 陈国雄 (主任) 主检: 王瑞娟 复核: 梁志江			

  		佛山市质量计量监督检测中心 2015191324Z 佛山质量计量监督检测中心			
<h1>检 验 报 告</h1>					
表号: QR-CX049-02/ED.10.0		No: Q16-WT1426			
		共 4 页 第 2 页			
序号	标准 条款	检测项目及标准要求	检测结果		单项 判定
			型号 FP102	型号 MFCS-FP102	
1	6.2.3	风机盘管测试工况 工作电压/频率: 220V/50Hz 空气侧干球: 26.5 ℃ 出风静压: 12Pa			-----
		风量	高速 1046 m ³ /h 中速 836 m ³ /h 低速 639 m ³ /h	1053 m ³ /h 850 m ³ /h 660 m ³ /h	
		功率	高速 110.0W 中速 92.1W 低速 78.2W	55.0W 35.0W 23.1W	

- With the help from the built-in variable speed drive technologies, the Integrated PMSM motor can work with any brand 3 speeds thermostat or 0-10V step less control thermostat in the existing market.
- When the Thermostat has Modbus Device for IoT communication, it can connect to customers' Building Automation System, forming remote control feature.

Parameter of FT Series Easy Maintenance Fan Coil Unit driven by Smart Integrated PMS motor

Performance		Model	200	300	400	500	600	800	1000	1200	1400
Air Flow (m³/h)	H		360	520	720	850	1020	1360	1700	2040	2380
	M		255	380	510	630	765	890	1275	1530	1785
	L		170	250	340	425	510	680	850	1020	1190
Cooling Capacity (w)	H		2085	3150	3940	4670	5650	7505	9205	11250	13000
Heating Capacity (w)	H		3250	4900	6400	7320	8830	12285	14395	18980	22100
Water Flow(L/S)			0.100	0.150	0.190	0.232	0.280	0.370	0.450	0.540	0.630
Water Resistance (kPa)			3.3	7.5	12.2	19.4	24.9	15.7	24.8	41	52
Power Source : 220VAC Single Phase 50/60Hz											
Motor	Model	3 phases 380V Sine Wave 120W Integrated Permanent Magnet Synchronous Motor									
		Work on Input Voltage AC 200 ~ 260V 50Hz/60Hz									
	nos.		1	1	1	1	1	1	2	2	2
Input Power	12PA		15	26	32	40	48	85	98	130	167
	30PA		20	32	40	52	65	110	130	145	194
	50PA		27	40	60	70	90	125	148	180	235
Blower	Forward Blade, Low Noise, High Efficiency DIDW metalCentrifugal Fan										
	nos.		1	1	2	2	2	2	3	4	4
Coil	Pressure	Maximum working pressure: 17.5KG/CM² (250PSIG)									
	Type	Standard two pipes three-row efficient cooper pipe through hydrophilic aluminum foil fin									
Adapter	Water	Inlet and Outlet pipe 3/4" FPT									
	Drainage	Drainage pipe 3/4" FPT									
Noise (dBA)	12PA		33.7	35.1	35.8	37.8	41.4	42.7	44.8	43.8	46.3
	30PA		36.5	36.9	37.5	39.7	43.2	44.1	46.2	45.1	47.3
	50PA		39.4	39.2	40.2	41.2	45.1	46.5	46.7	47.2	48.2
Dimension	Length (mm)		720	837	970	1037	1105	1390	1560	1810	1990
	Width (mm)		485	485	485	485	485	485	485	485	485
	With plenum Box		504	504	504	504	504	504	504	504	504
	Height		250	250	250	250	250	250	250	250	250
機重(kg)	Without plenum box		16	18	21	22	23	30	33	43	46
	With plenum Box		20	22	25	27	28	36	39	46	51

Note:

- ◎ The above cooling quantity involves three rows of coil based on the inlet air conditions: i.e. DB=27°C, WB=19.5°C
Water Inlet Temperature of 7°C water outlet temperature of 12°C
- ◎ The above heating quantity involves three rows of coil based on the inlet air conditions, i.e. DB=21°C,
water inlet temperature of 60°C, with the same water quantity as cooling
- ◎ The above cooling quantity, heating quantity, input power and noise are all valued at high speed mode of operation
- ◎ Noise value refers to the value measured at the measurement point 1m away from the front and underneath of the unit
under the operation status of nominal air volume of the unit in the anechoic chamber

Noise Level at Mid Speed

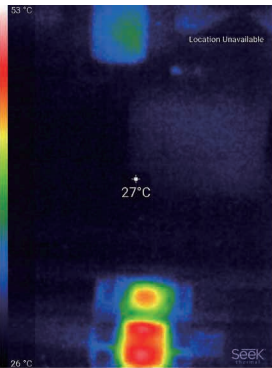
Static	Speed	Hz	FTD Series Noise Level (dBA)								
Pressure	Setting		200#	300#	400#	500#	600#	800#	1000#	1200#	1400#
PA12	MID	63Hz	22	26	28.5	29	31	33.2	35.8	36	37.8
PA30	MID	125Hz	27.5	28	29	30.5	32.9	36.1	37.8	37.5	39
		250Hz	28.2	29.4	30	32.2	35.8	37	39.2	38	40.5
		500Hz	27.8	28.8	29.2	31	35	35.7	38	37.1	39.2
		1000Hz	26	27.2	28	30.2	34.5	34.8	36.5	36.8	37.5
		2000Hz	19.5	20.8	23.5	26.4	28	29	32	33.2	35.2
		4000Hz	12	14	16.5	20	21.2	23.2	26	28	29
		8000Hz	5.5	6.2	6.6	11	13.8	15.1	16.4	19.6	20.2
		Lw(dBA)	29	30.5	31.8	34.2	36.9	38.4	40.6	41.2	42.7
		63Hz	27	29.5	30	32	35.2	36.9	38.2	38.5	38.8
		125Hz	29	30.8	31.2	33.5	36.7	37.5	39	39	39.9
PA50	MID	250Hz	31	31.3	32	34	37.5	38.5	40.5	39.6	41.5
		500Hz	30.2	29.9	31.5	32.2	36.1	36	38.7	38.8	40
		1000Hz	28	29.2	30	30.8	33.8	34.8	37.6	37	38.7
		2000Hz	22	22.9	24.3	29	30.5	32	34.2	34.8	36.8
		4000Hz	15.2	16	18.8	33.2	26	26.8	28.5	40.2	32
		8000Hz	7.1	8	9	15	20.4	22	22.5	24.8	26.9
		Lw(dBA)	31.6	32.6	33.8	37.9	39.9	41	42.8	44.5	44.7
		63Hz	30.2	31.2	32.7	34.5	37.7	38	39.5	39.8	40.1
		125Hz	32.5	32.7	33.5	35	37	40.1	40.3	40	41
		250Hz	33.9	33.5	34.7	35.9	39.5	41	41.2	40.5	42.7
		500Hz	32.2	31.9	32.9	34.7	38	39.5	40.8	39.7	41
		1000Hz	31.5	29.4	31.8	33	36.7	37.3	39	37.8	39.2
		2000Hz	26	27	28.8	31.5	32.5	33	34.5	35	36
		4000Hz	18.2	20	23.2	26.8	28	29	30	40.7	31.4
		8000Hz	11.3	13	14	14	20.6	21.5	22	33	23.2
		Lw(dBA)	34.9	35.2	36.9	38.6	41.7	42.8	43.8	46.2	44.7

PMS Motor

Permanent Magnet Synchronous Motor (PMS Motors) also known as electronically commutated motors is made of solid magnetic materials. The strong magnetic flux is generated by the coils of the stator at operation. Since energy is stored at the rotor's magnetic material, it reduces the core loss and achieves very high energy efficiency. PMS Motor minimizes the noise generated because it runs without a bush and with very low core loss. High efficiency reduces heat loss which will prolong the motor bearing hence the motor lifespan.



With the help from our proprietary designed built-in variable speed driver, the mFCS PMS Motor can work with thermostats of any brand, either 3 speeds or 0-10V step less control.



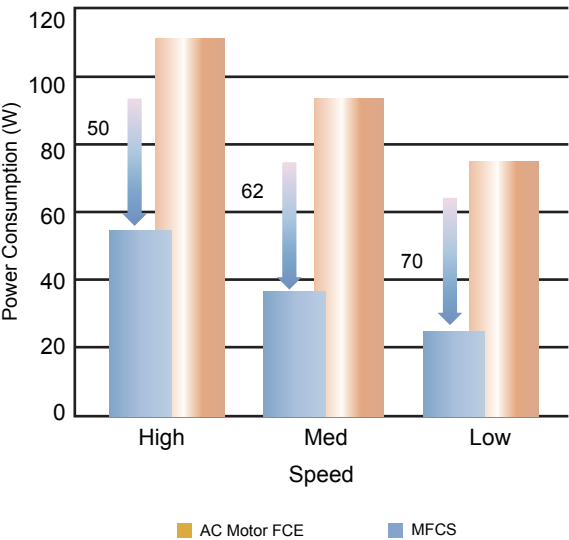
Two sets of FCUs had operated for one hour before the thermogram was taken. The temperature of the AC motor was 53°C while the temperature of the mFCS Integrated PMS Motor was only 27°C.



Heat generated by the AC motor will become cooling load of the chiller system..Energy will be wasted to remove the heat generated by the AC motor. Due to the high efficiency of the PMS motor, heat loss is much less. It further increases the energy saving rate.

Energy Saving Performance

MFCS PMSM reduces energy consumption >50% to >70% compared to traditional fan coil unit ran by AC induction motor.
note:“* at low fan speed”



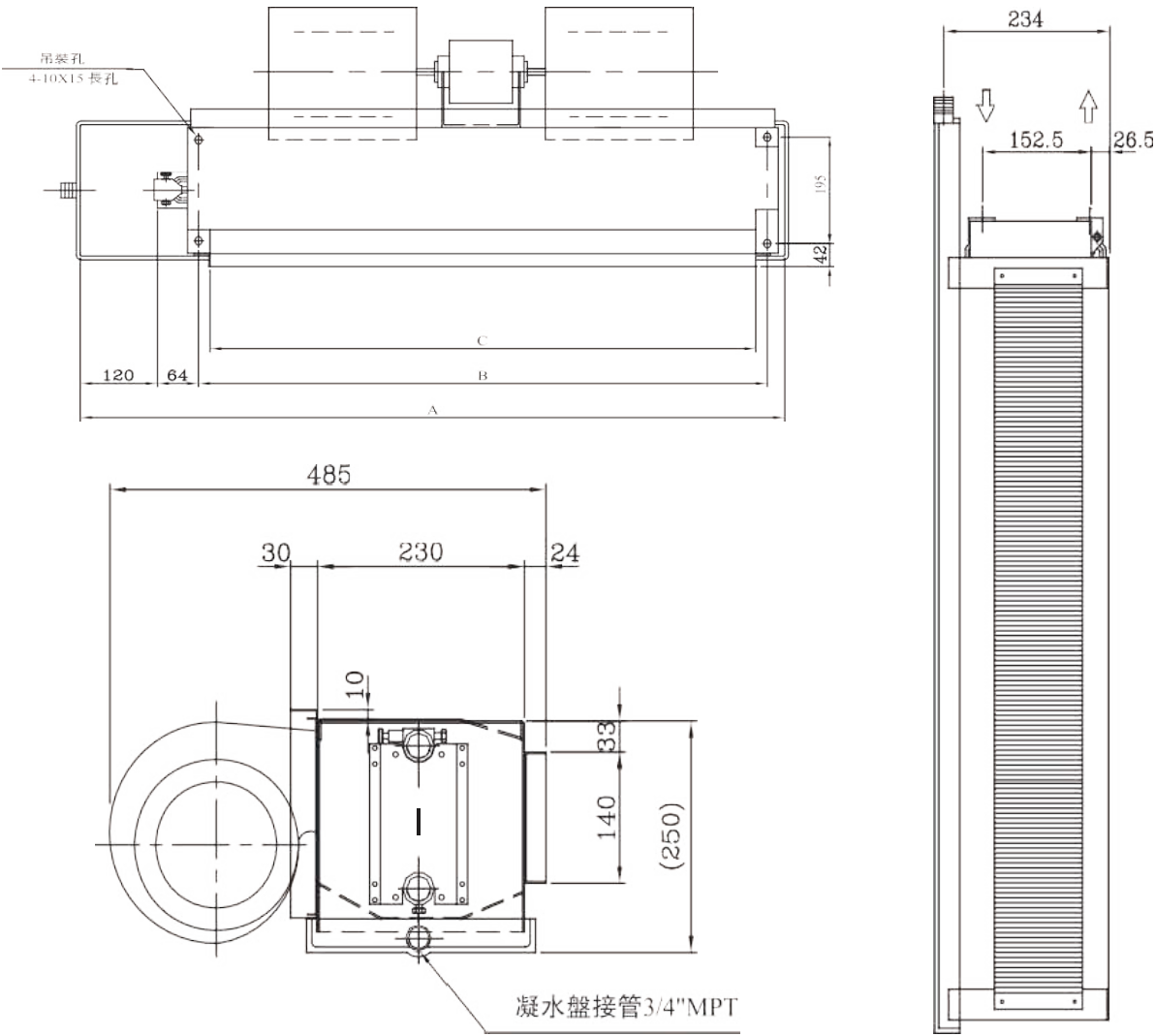
Speed	Power Consumption(W)		Power Saving	
	AC Motor FCU	MFCS	(W)	Saving
High	110	55	-55	50%
Med	92	35	-57	62%
Low	78	23	-55	70%

Test Specimen: MFCS 600 CFM

Installation Processes

- 1.) During installation and moving of the Fan Coil Unit, the technician must take great care on preventing physical damage to the FCU, especially to the fan blowers, the motor and the coils, and avoid damage to the Insulation material of the Drain Pan. Avoid holding the blowers and the forward blade centrifugal fan by hand; by which this action may damage the dynamic balance of the fan.
- 2.) During installation process, when the Fan Coil Unit is fixed onto the ceiling, the technician shall use a Level Rod to ensure the Fan Coil Unit will be properly installed. The Fan Coil Unit must be installed with a certain degree of declination toward to one side where the pipe is connected, so as to enable the condensation water drain out the pan easily.
- 3.) When connect the chilled water pipe to the copper coil, the technician must first clear out any blur, dirt, make sure there will not have any dirty things leave during manufacturing.
- 4.) It is suggested to install a filter in between the incoming chilled water pipe and the FCU's copper coil; for the purpose of preventing any dirt blocking the copper coils.
- 5.) During the installation of the Plenum Box, it is suggested to take great care on the placement of electric wiring so as to avoid damage the wires; avoid wire short circuit; and avoid cause fire.
- 6.) During installation of both the Plenum Box and the Extend Air Duct, please ensure there will not have air leakage. The exterior of the Plenum box and the Extend Air Duct must be covered with fire retarded PE insulation material. The downward side of the Plenum box; facing the return air grille where a filter is placed for filtering out the air particles and dust, the size of the return air grille must be big enough for easy maintenance and for easy dismantle the Fan Desk,
- 7.) The wires of the motor are connected in factory to the Electrical Box built in left or right side of the FCU before export, there is no need to change the wires connection. If there will have any chance to change the wires connection during installation, re-connection of the wires shall be done by professional technician who shall strictly connects the wires with according to the circuit drawing and wires color code shown on the Electric Box.
- 8.) It is suggested not to control the Fan Coil Units in group control, especially not to connect different together.
- 9.) It is prohibited to modify the Fan Coil Unit, otherwise, there may have electrocute, condensation water leakage or any other disaster happen. The user will responsible for all these consequences.
- 10.) After finish installation before the machine operate, please cover up the machine to prevent dust, dirt accumulation, moisture proof, and freeze proof.
- 11.) It is suggested to cut OFF the power when the Fan Coil Unit will be idle for a long time. Careful procedure may be made before re-connection of power to the Fan Coil Unit by measuring the "To Ground Resistance".
- 12.) It is prohibited to use steam or hot water above 85°C as the heat source. It is suggested to use soft water for those 2 pipes system on cold/hot mode operation.
- 13.) The Fan Coil Unit shall be drained out all water in the coil before winter season, or add some anti-freeze additive inside the idled Fan Coil Unit. This will prevent the coil being damaged by freezing the water inside the coil; by which the water will transform to Ice and causes coil leakage.
- 14.) Before the Fan Coil Unit restored to operation, please clean up the drain pan and make sure the drain pan is good shape.
- 15.) Please check, clean and inspect the forward blade centrifugal fan, the screw nuts, and the motor periodically and to ensure all the components are in good shape.

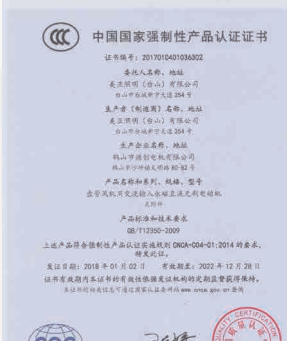
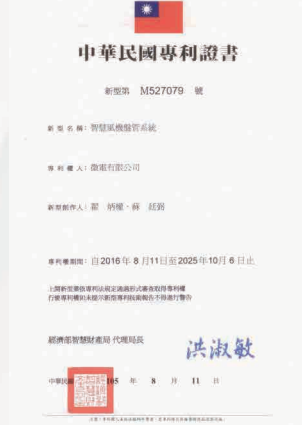
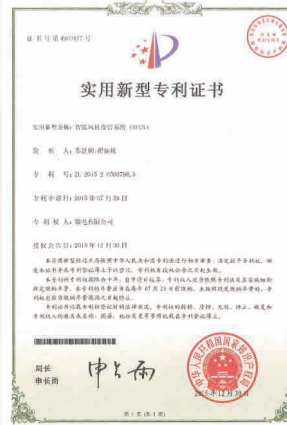
Standard Two Pipes Three rows Model WA Concealed Type Fan Coil Unit



Dimensions Table of Model WA Unit:mm

機型	外型呎吋 Diameter (mm)		
Model	A	B	C
200	720	498	463
300	837	615	580
400	970	748	713
500	1037	815	780
600	1105	883	848
800	1390	1168	1133
1000	1560	1338	1303
1200	1810	1588	1553
1400	1990	1768	1733

Glory and Kado from LORD





For more information, please contact [MictronicsCo.,Ltd.](mailto:info@micronicshk.com) via any of the below channels.

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* This manual is only for reference.Honest reserves the right of final explanation and modification of the FCU listed hereunder.