

FT Series

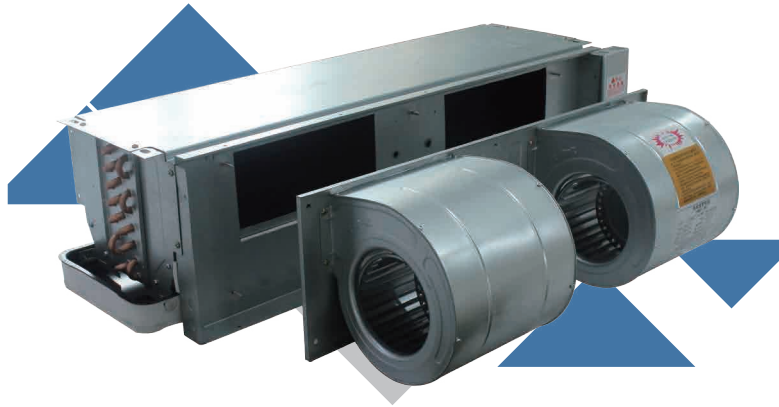
Easy Maintenance & Energy Saving Fan Coil Unit

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



CIC GREEN
PRODUCT CERTIFICATION
CIGPC-L-22259(FCU)

FT Series Easy Maintenance & Energy Saving Fan Coil Unit



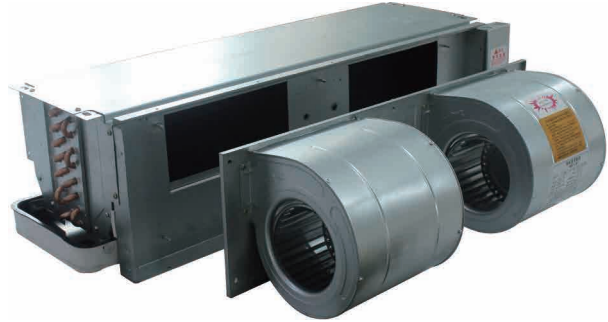
Features: Product Design and Characteristics

- 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.

FT Series Easy Maintenance & Energy Saving Fan Coil Unit

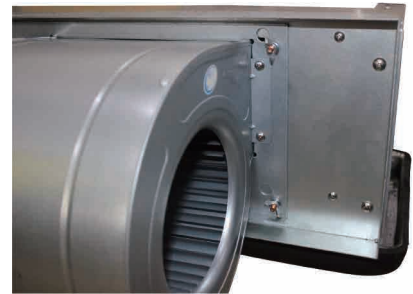
Feature 1:-- The whole FCU is precisely designed thoroughly:--

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.



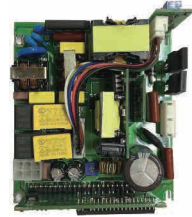
Feature 5:-- Silent Operation:

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.

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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

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.

佛山市质量计量监督检测中心
检验报告

表号: QR-CX049-01A/ED.10.0 No: Q16-WT1426

产品名称 型号、规格 商标、等级	风机盘管 FP102和MFC5-FP102、220V、 50Hz	生产日期/批号	号
委托单位	美亚照明(台山)有限公司	检验类别	委托检验
委托单位地址	台山市城新守大道254号	样品数量/送样 方式	各1台/送样
生产单位 (委托方提供)	美亚照明(台山)有限公司	接样日期	2016年07月29日
生产单位地址 (委托方提供)	台山市城新守大道254号	检验人	李冬平
检验地址 及状态	外委完好	检验日期	2016年7月30日
检验依据	GB/T 19232-2003 《风机盘管机组》		
检验 结论	经检验, 所检项目符合规定。		
备注	1. 本报告中只对样品负责; 2. 环境温度: 23℃~27℃, 相对湿度: 50%~70%。		

日期: 2016年8月17日 审核: 廖云卿 检验员: 李冬平

佛山市质量计量监督检测中心
检验报告

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 MFC5-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 °C 出风静压: 12Pa			
	风量	高速	1046 m ³ /h	1053 m ³ /h	
		中速	836 m ³ /h	850 m ³ /h	
		低速	639 m ³ /h	660 m ³ /h	
	功率	高速	110.0W	55.0W	
		中速	92.1W	35.0W	
		低速	78.2W	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 Micronics Fan Coil Unit

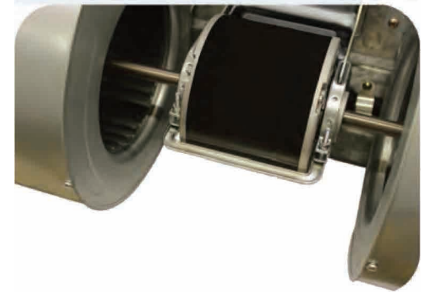
Model No	FTD-200			FTD-300			FTD-400			FTD-500			FTD-600			FTD-800			FTD-1000			FTD-1200			FTD-1400			
Speed	High	Mid	Low	High	Mid	Low	High	Mid	Low	High	Mid	Low	High	Mid	Low	High	Mid	Low	High	Mid	Low	High	Mid	Low	High	Mid	Low	
Air Volume (m ³ /h)	12Pa	340	255	170	510	380	255	680	510	340	850	635	425	1020	765	510	1360	1020	680	1700	1275	850	2040	1530	1020	2380	1785	1190
	30Pa	340	255	170	510	380	255	680	510	340	850	635	425	1020	765	510	1360	1020	680	1700	1275	850	2040	1530	1020	2380	1785	1190
	50Pa	340	255	170	510	380	255	680	510	340	850	635	425	1020	765	510	1360	1020	680	1700	1275	850	2040	1530	1020	2380	1785	1190
Cooling volume (w)	2122	1907	1616	3092	2781	2399	3936	3531	3058	4995	4410	3830	6119	5488	4692	7522	6857	5905	9834	8974	7653	12230	10991	9473	13455	12234	10491	
Heating volume (w)	3370	2880	2310	4810	4130	3350	6210	5350	4360	7660	6490	5380	9080	7810	6380	11840	10190	8340	14110	12150	9990	17050	14630	12000	20060	17180	14050	
Overall dimension (LxWxH) (mm)	808x594x256			908x594x256			1008x594x256			1108x594x256			1208x594x256			1408x594x256			1608x594x256			1708x594x256			2008x594x256			
Net Weight (kg)	15			17			19			21			22			29.5			31			35.5			41			
Working pressure (kg/h)	370			520			650			830			980			1200			1550			1950			2400			
Fan	Forward-curved low-noise, small-size, high-efficient DIDW metal centrifugal fan																											
Blower	1			1			2			2			2			2			4			4			4			
Noise dB(A)	12Pa	37	35	31	38	37	33	39	35	28	41	38	31	43	39	34	45	40	33	47	43	38	50	46	38	52	49	44
	30Pa	39	36	33	41	39	36	43	38	33	45	41	37	47	43	40	47	42	36	48	43	39	52	50	41	54	50	43
	50Pa	40	38	35	43	41	38	45	42	37	46	43	39	48	44	41	49	43	38	51	45	39	54	52	43	56	53	44
Power Supply	220V±10V,50Hz±0.25Hz																											
Coil	Standard two pipes three-row efficient cooper pipe through hydrophilic aluminium foil fin																											
Coil Working Pressure	18Kgf/cm ²																											
Inlet and Outlet Pipe	ZC3/4" FPT																											
Drainage Pipe	ZC3/4" FPT																											
The above cooling quantity involves three rows of coil based on the inlet air conditions DB=27°C, WB=19.5°C Water inlet temperature =7 °C Water outlet temperature =12 °C																												
The above heating quantity involves three rows of coil based on the inlet air conditions DB=21°C Water inlet temperature=60 °C																												
The noise is measured at the area less than 20dB(A). The distance is 1m away from the source																												

Noise Level at Mid Speed

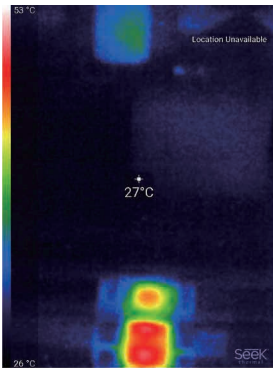
Static	Speed	Hz	FTD Series Noise Level (dBA)								
			200#	300#	400#	500#	600#	800#	1000#	1200#	1400#
PA12	MID	63Hz	22	26	28.5	29	31	33.2	35.8	36	37.8
PA30	MID	125Hz	27.5	28	29	30.5	32.9	36.1	37.8	37.5	39
		250Hz	28.2	29.4	30	32.2	35.8	37	39.2	38	40.5
		500Hz	27.8	28.8	29.2	31	35	35.7	38	37.1	39.2
		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.



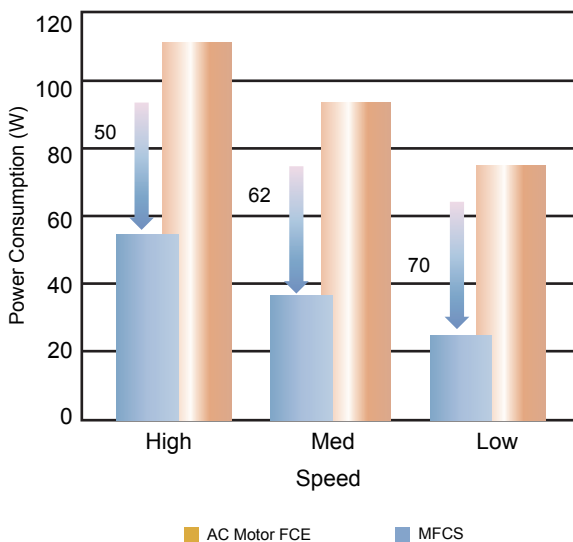
Two sets of FCUs had operated for one hour before the thermogram was taken. The temperature of the AC motor was 53°C while the temperature of the mFCS Integrated PMS Motor was only 27°C.



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"

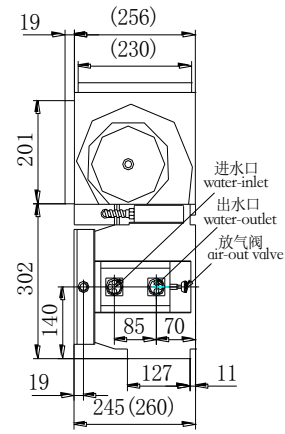
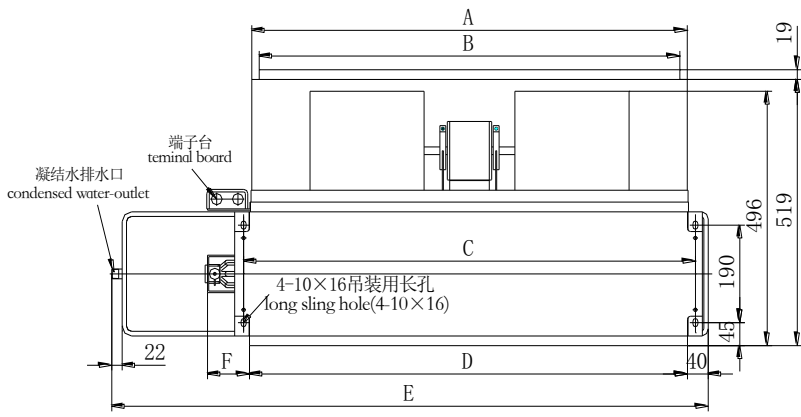


Speed	Power Consumption(W)		Power Saving	
	AC Motor FCU	MFCS	(W)	Saving
High	110	55	-55	50%
Med	92	35	-57	62%
Low	78	23	-55	70%

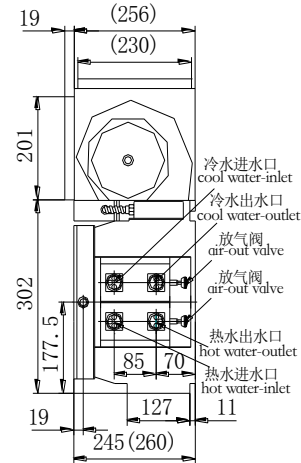
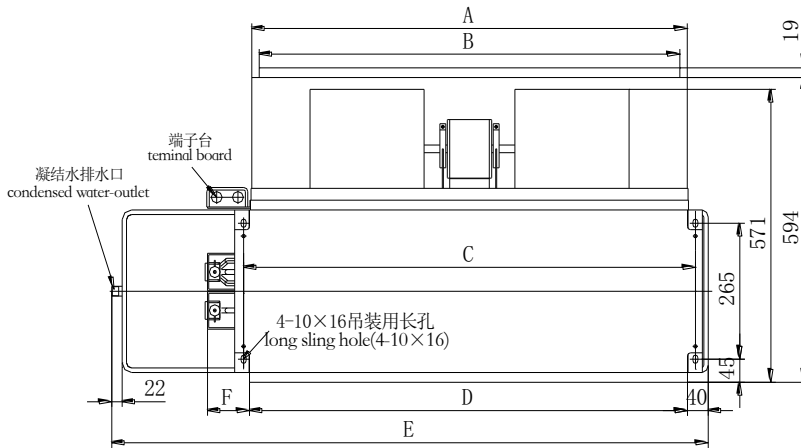
Test Specimen: MFCS 600 CFM

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.



二管制
WA型
Model WA
卧式暗装
Horizontal-installed



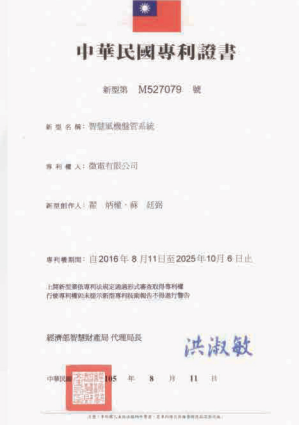
四管制
WA型
Model WA
卧式暗装
Horizontal-installed

Dimensions Table of Model WA Unit mm

Model Size	FTD-200	FTD-300	FTD-400	FTD-500	FTD-600	FTD-800	FTD-1000	FTD-1200	FTD-1400
A	482	582	752	782	882	1152	1357	1452	1597
B	452	552	722	752	852	1122	1327	1422	1567
C	515	615	715	815	915	1115	1305	1415	1630
D	487	587	687	787	887	1087	1277	1387	1602
E	808	908	1008	1108	1208	1408	1708	1708	2008
F	94						101		
net weight(kg)	15	17	19	21	22	29.5	31	35.5	41

Shows sizes of air-return box(back ward/downward air-return).

Please specify if the air-return box needed,as well as downward/backward air-return.



Maintenance

Micronics Fan Coil Unit maintenance process.

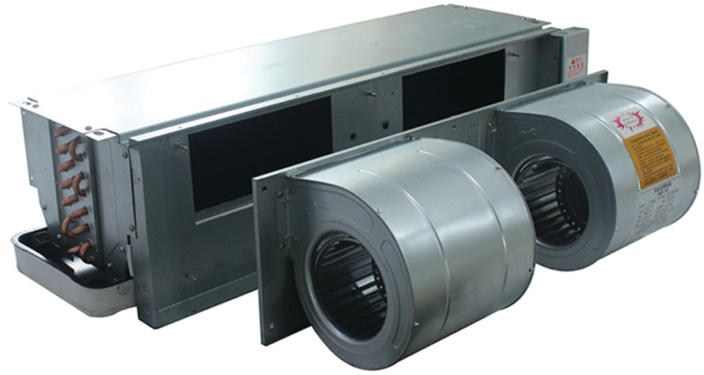


1. Turn off fan coil unit and disconnect wiring.
2. Unscrew the wing nuts holding the back plate holding the blower and motor.
3. Thoroughly clean the dust and debris inside the blower and all the fan blades
4. Clean the drain area to ensure proper air flow.
5. Reattach the back plate holding the blower and motor with the wingnuts
6. Reconnect all wiring

Micronics recommend cleaning the blower and fan blades once every 6 months and doing a full clean of the blower, fan and drain pan yearly.

Disposal

Do not try to dismantle the fan coil unit yourself: the dismantling of the air conditioning system, and other parts including the fan coil unit motor must be done by a qualified installer in accordance with relevant local government legislation. Fan coil units and all of its parts must be disposed or recycled through local recyclers of construction wastes. By ensuring this product is disposed of correctly, you will help to prevent potential negative consequences for the environment and human health. Please contact the installer or local authority for more information.



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