

1

-

# **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 CICGPC-L-22259(FCU)

GOLD



# 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.

02

# FT Series Easy Maintenance & Energy Saving Fan Coil Unit

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

 The side plate, designed in a zigzag shape, enhancing high fixation strength, improves sealing and reduces air leakage.
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

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.



• 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 Mictronics Fan Coil Unit

Model N	0	FT	D-200		FT	D-300-		FTI	D-400		FTI	D-500		FTI	D-600		FT	D-800		FT	D-1000		FT	D-1200	ι.	FTI	D-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
	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
Air Volume (m3/h)	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 vol (w)	ume	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 vol (w)	ume	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 dime (LxWxH) (1		80	8x594x2	256	9082	x594x2	56	1008	x594x2	56	1108	x594x2	256	1208	8x594x	256	1408	x594x2	56	1608	3x594x2	256	170	8x594x2	256	2008	3x594x2	256
Net Weight	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									Fa	orward	l-curve	d low-	noise, s	small-s	ize, hi	gh-eff	ïcent D	IDW n	netal c	entrifu	gal fan							
Blower		1		1		2		2		2			2			4		4		4								
	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
Noise dB(A)	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 Sup	oply													220V±	10V,5	0Hz±0	).25Hz		•				•					
Coil								s	standa	rd two	pipes t	three-r	ow eff	icient o	cooper	· pipe	throug	h hydro	ophilio	: alumi	nium fo	oil fin						
Coil Work Pressure	0														18Kg	f/cm <sup>2</sup>												
Inlet and O Pipe	utlet	ZC3/4" FPT																										
Drainage F	Pipe													2	ZC3/4	" FPT												
The above co	ooling	quanti	ty invo	lves th	ree rov	vs of c	oil bas	ed on t	the inle	et air o	conditio	ones D	B=27°0	C, WB=	=19.5°	C Wa	ter inle	t temp	eratur	e =7 °C	Water	outlet	tempe	rature =	=12 °C			
The above he	eating	quant	ity invo	olves th	ree ro	ws of c	oil ba	sed on	the inl	et air	conditi	ones D	B=21°	C Wate	er inle	t temp	peratur	e=60 °C	2									
The noise is a	measu	red at	the are	a less t	han 20	dB(A)	. The	distanc	e is 1n	ı away	from 1	the sou	rce															

# Noise Level at Mid Speed

Static	Speed	Hz			FTI	) Serie	s Nois	e Leve	l (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
		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
PA30	MID	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
		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
PA50	MID	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

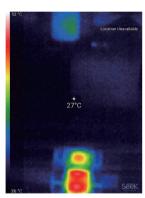
Mictronics Co.,Ltd

# **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 lifispan.



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

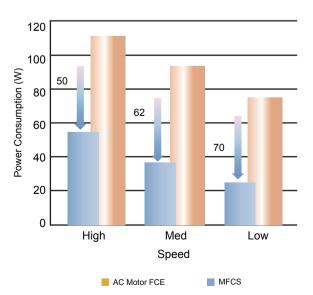


53 °C while the temperature of the mFCS Integrated PMS Motor was only 27 °C.

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  $\Pr_{MOT}$  Motor

# **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"

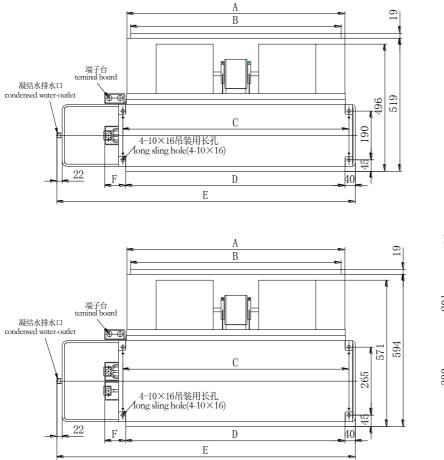


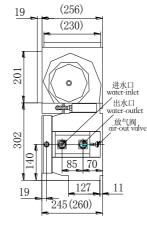
Speed	Power Cons	sumption(W)	Power Saving			
opecu	AC Motor FCU	MFCS	(W)	Saving		
High	110	55	-55	50%		
Med	92	35	-57	62%		
Low	78	23	-55	70%		

Test Specimen: MFCS 600 CFM

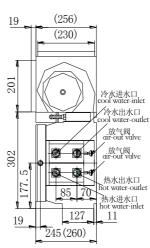
# **Installation Processes**

- 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 profes sional 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℃ 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
Α	482	582	752	782	882	1152	1357	1452	1597
В	452	552	722	752	852	1122	1327	1422	1567
С	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			9	4				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/bacdward air-return.

Mictronics Co.,Ltd

Weekering Ru ۰ HK-E MINING OF BELLEV ALL PARTY BIXPO 2017 8 R 9 W 80007 5 P 中華民國專利證書 ntional Exposition of Electric Power Tec International Invention Fair nher 1-3, Gwangju, Republic of Korea <sup>定則應大獎</sup> on Award for t 实用新型专利证书 新型第 M527079 號 Certificate of Award ※計算型条件: 按算具具指行系符 (S(CS)) N TH & M: WEINING WART ALSO ing committee of BIXPO 2017 hereby a 发 明 人;苏北阳,南东拉 ■ 利 欄 大: 微能有限公司 9 #1 15+20.2015.2 0500500.0 Bronze Prize Industrial Category 2利中济升,2015年07月29日 新闻和作人: 翟 /所謂, 琢 /获弱 PING KUEN CHACK (Hong Kong) 力 机 权 人, 梁原有限公司 Certificate of Merits 授教会符目:2018年12月30日 for the invention of 電視 (2) 前:2010年12月10日 各省安全型工作品標準令人成本研究中認定行動需要素。要定該予会就认 市 支援相等考试的工作品標準令。等代的考慮工作品。 考研以不可能。考加、考研及常規、 和認定型組合等。各年代的平常工作品合作了用了的 电容器、本規模研究超低平容的,并 机成合型組合等型化在建築法。 不到而各方式形式的现在。提供这一个相同指称。在例,反比 供点、现度和 并机成为可能品合作。提供、企業、全型工作品合并有100万元。 #R####: 直2016年8月11日至2025年10月6日止 Mr CHACK Ping Kuen A Smart Fan Coil Unit 上其新型要依该可以收定通過形式審查取得專利權 行使專利構改未能示影響等利益素優先不得盡行會60 contribution to technological creativity and advancement of electric power industry Retrofit Kit of iFCUTM Intelligent Fan Coll Unit 經濟部智慧財產局 代理局長 洪淑敏 Incho 申二雨 局长 CHO Hwan-eik President & CEO Korea Electric Power Corp 8 11 11 11 SCE GLE W語記版留符中記記版 Patents Registry sclust Property Department でした。 Special Administrative Region (() 中国国家强制性产品认证证书 CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION [1]2] = 2015 [1: 10 ]] 30 [1 Date: 30 October, 2015 村田国家、田村工厂「 注意集等:201701401030302 委托人名布、地址 系法规则(台山)前代公司 白山市石市中下大江34年 主产者(制造有)名布、地址 系式规则(台山)高市公司 名山市内市中下大江34年 主产者公式有、地址 出入市省公司长期代的一日。 CERTIFICATE INFORME CONTINUES ON CONTINUES ON CONTINUES ON CONTINUES ON CONTINUES OF THE APPLICANT May Augring (Tarking) Company, United Schwart, Bock Schwa Date: 30 October, 2015 Add Aug Milling Restances Add K.L. Lerong Registrar of Patents 批予短期專利證明書 (專利條例)(第514章) CERTIFICATE OF GRANT OF SHORT-TERM PATENT Patents Ordinance (Chapter 514) 222097 + 12322009900 + 1232 F Chereby certify that a shart-term parent with the following particulars he HESHAN YUANCHUANG MOTOR CO. LTD Thermay Roal Shang Their Means CR, Guayoon DUCT NAME, MODEL AND SPECIFICATION BLDC See assembly CAND TECHNICAL REQUIREMENTS FOR THE GBT122350-2009 Levery cellight data a back-basis youn, who the forming period 中学時代人地生活を発展した。Same and Address of Propriets MCTRONES CORPANY LIMITED No 14.16mg Vig Strate Room CT-the Proce Wing Hung Industral Building Kown Tong, Kanlott Elboxt KONG 产品名称和系列、规格、型号 查管风机可交流输入水磁正洪之利电标机 Under sockion 179(2) of the Univers Dedimants: to keep the short-innu patient in times the si dedime it years under the copys of the 400 years from the stars of Ching of the applications for the years of the issues of the disk to be paire of the 400 years. Other the data of panel of the stars or 20 well. There the data of panel of the 400 years of the 400 ye 产品标准和技术要求 (B/T12350-2009 This is to carrify that the above muscless or conception with the regularements of employmentation rules for computery contribution/RFX02.0K2A-C6441-2516) Valid from: Jan (2020) Valid Audit: Doc 25, 2022 The validity of the molecular is an advanced by contribution of the page follow or impediations by instruction food you'll the exploy data. The continuements are instruction food you'll the exploy data. 上述产品符查摄制性产品认证实施规则 ONCA+004-01:2014 的要求。 特发优征。 WEIGHT Patent No - HICI 201749 增度此证。 家证目期:2018年01月02日 考決期度:2022年12月28日 计考查规则内本证书的考试性情况呈红和的处式监管获得体势。 卡证明的书代社长"说证实实以上考书和mainten zone con con 發明公顧 Title of Invention: 何慧這種監督希疑 A SMART-FAN COIL SYSTEM トデード(1997年) 1975年) 1975日 - 日本市 1975日 - 日本市 1998日 - 日本市 1988日 - 日本日 1988日 - 日 198811 - 日 198811 - 日 198811 - 日 19881 (i) (ii) The grint of a device partial does not follow as obtainables, constrained or its palantability, by the Suppress of Pattern for Reduct information, plana notes to be accurate 2000 form pattern of the solution of functional (Property Pattern for Reduct information, plana notes to be accurate 2000 form pattern of the solution of functional (Property Pattern for Reduct information), plana notes to be accurate 2000 form pattern of the solution of functional (Pattern for Reduct information). Cac) = #: 22/5 Cac 1. Vogkija 中国质量认证中心 CHINA QUALITY CERTIFICATION CENTRE - 10-- 10--( 中国国家强制性产品认证证书 CERTIFICATE OF CERTIFICATE OF CERTIFICATE of Conformity CERTIFICATE 据 1 页 兵 1 页 纸 号: 1841144 401036302 
 PY
 Birling
 Bir CIC Green Product Certification 60.0mm 建造業議會綠色產品認證 Unit G 12/F Wang King Address Unit G 12/9 Wang King Kowlaan Prockast Workelju) This is to certify that 武 昭 明 MICTRONICS CO. LTD. 微電有限公司 BLDCSM35. AI Modelal BLDCSW35, AN Toda Mark ter the Product X来高 Model Number 15世 Smart Fan Coll Unit FTD200-1400 智慧影影振展機 Teads Him -----The successful with the form The sale Freduct Category #1 Fan Coll Unit 盤管風機 EN 01335-1: 2012+A11: 2014 EN 55014-1: 2005+A2: 2011, EN 55014-2: 1997+A1: 200 EN 61000-3-2: 2014, EN 61000-3-3: 2013 CONFORMITY The tests were performered and to CONFORMITY The CE makings as into has achieved compliance with the Assessment Standard and is rated GOLD 符合建造菜道會錄色產品認證之評審標準並獲得金評級 The CE manage at a CE Acced In CHENG Ting ring, Abert Executive Director, Construction HE Cac ± #: 22/5 CIC GREEN CE (Here) 群定率工程师 執行總監,建造業議會 中国质量认证中心 If a second to the second Fax: (69)755-92591332 Email: webmaster@LCS cart core Fas: (86)/95-82591332 Email: webbasized(LCS-cartures

#### Maintenance

Mictronics 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

Mictronics 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.





For more information, please contact us: Tel: +852 2956 2052 | Email: info@mictronicshk.com Unit 103A 1/F, Enterprise Place 5 Science Park W Avenue, Hong Kong Science Park Shatin, New Territories, Hong Kong