

产 品 规 格 书

PRODUCT SPECIFICATION

名 称 (NAME): 直流离心风机 EC centrifugal fan

型 号 (MODEL): SC630F5-AKT-00

配置代码 (CONFIGURATION CODE): 003

版 本 号 (VERSION NUMBER): A/0

编 制 (MAKE): 吴兆堂

校 对 (EDITE):

审 核 (CHECKED):

批 准 (APPROVED):

客户确认 (CUSTOMER APPROVE):

日 期 (DATE):

换版记录Describing of Alternations

版本号 Revision	换版原因 Reason for revise	修订内容 Description for revise	姓名 Make by	日期 Date
A/0	/	/	吴兆堂	2016-3-3

1.0 概述/ introduction

本规格书主要描述了产品标准、使用环境、技术要求等.

This specification describes the standard 、operation environment、and technic requirements of the product.

2.0 产品标准和安规要求/Requirement of production standard and safety regulations

2.1 本产品符合的标准 / The product satisfy requirements

2.1.1 GB 14711 《中小型旋转电机通用安全要求》

GB 14711 《General requirements for safety of small and medium size rotating electrical machines》

2.1.2 JB /T10563 《一般用途离心通风机通用技术条件要求》

JB /T10563 《General technical requirement for general centrifugal fan》

2.2 本产品全部材料符合 RoHS 要求.

All material accord with RoHS

3.0 使用环境/ Operating environment requirements

3.1 工作温度和湿度/ Operating temperature and humidity

工作温度范围: $-25^{\circ}\text{C} \sim +60^{\circ}\text{C}$, 工作湿度范围: $5\% \sim 95\% \text{ RH}$.

Operating temperatures range $-25^{\circ}\text{C} \sim +60^{\circ}\text{C}$, Operating humidity from 5% to 95% RH.

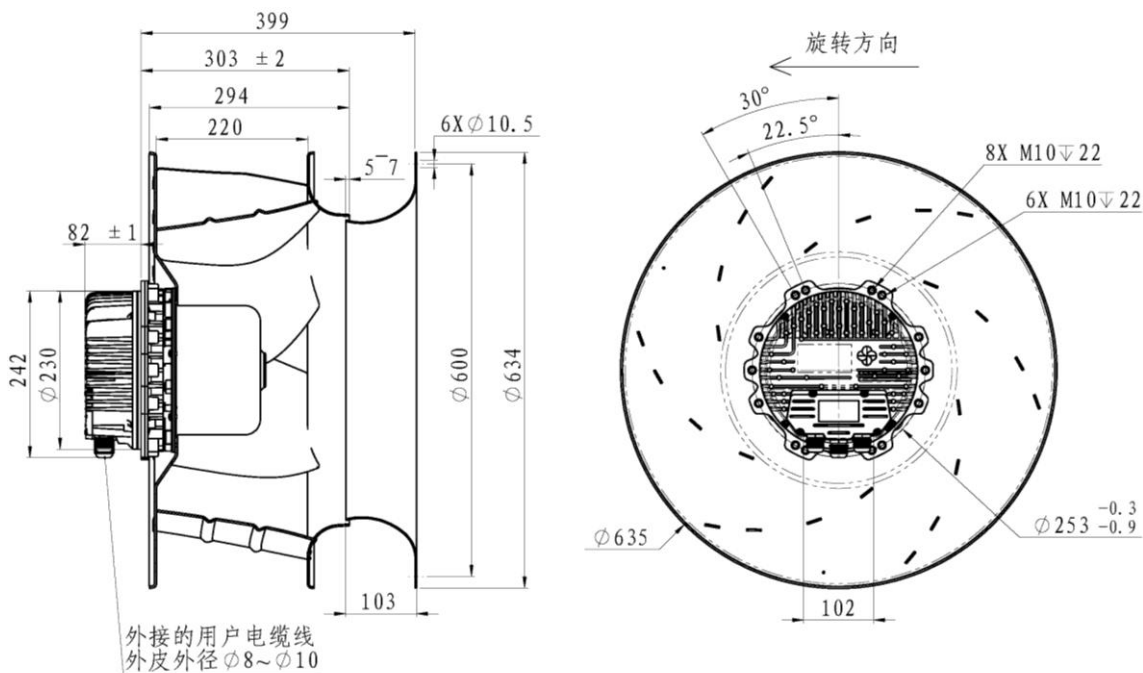
3.2 贮存温度和湿度/Storage temperature range and humidity

贮存温度范围: $-25^{\circ}\text{C} \sim +60^{\circ}\text{C}$, 贮存湿度范围: $5\% \sim 95\% \text{ RH}$.

Storage temperatures range $-25^{\circ}\text{C} \sim +60^{\circ}\text{C}$, Storing humidity from 5% to 95% RH.

4.0 机械要求/ Mechanical requirements

4.1 外形图/Dimension drawing



4.2 叶轮/Impeller

叶轮由铝合金材料制成。

Impeller made of sheet aluminum.

4.3 电机/Motor

外转子可调速永磁同步电动机 (DM150F5-AKT-03)。

External rotor, adjustable-speed permanent magnet synchronous motor (DM150F5-AKT-03)。

4.4 平衡/ Balancing

风机在 $1200 \pm 10\%$ r/min 运转时, 每个端面动平衡精度不低于 G6.3, 符合标准 JB/T9101.

At $1200 \pm 10\%$ r/min running speed, the residual unbalance of the fan not less than G6.3 (balancing precision grade) in each plane, according with JB/T9101.

4.5 振动/Vibration of the fan

风机振动速度有效值按照 JB/T 8689 标准规定。

Vibration speed virtual value of fan accord with JB/T 8689.

4.6 跳动/Runout of impeller

风轮轴向、径向跳动 $\leq 1.8\text{mm}$ 。

Runout of impeller in axial and radial direction $\leq 1.8\text{mm}$ 。

4.7 防护等级/Type of protection

风机的防护等级为 IP54。

Type of protection is IP54.

4.8 绝缘等级/Type of insulation

电机的绝缘等级为 CLASS F。

Type of insulation is CLASS F.

4.9 寿命/Life time

风机寿命估算值 40000 小时, (在额定电压、环境温度为 40°C 、风机全速运转时)。

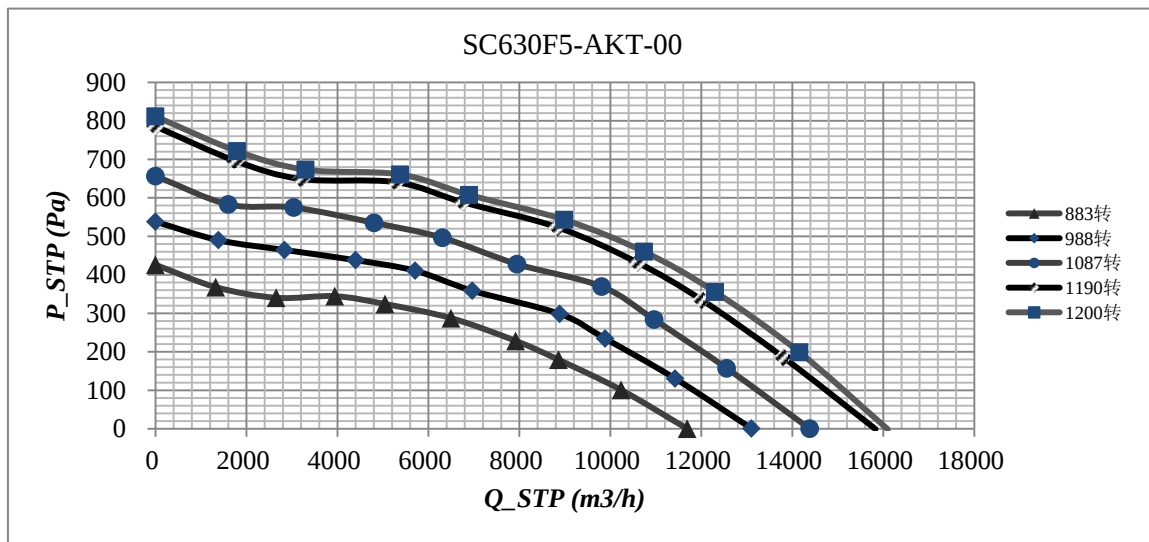
The fan life is expectant 40000 hours, at nominal voltage, running at full speed, and environment temperature at 40°C 。

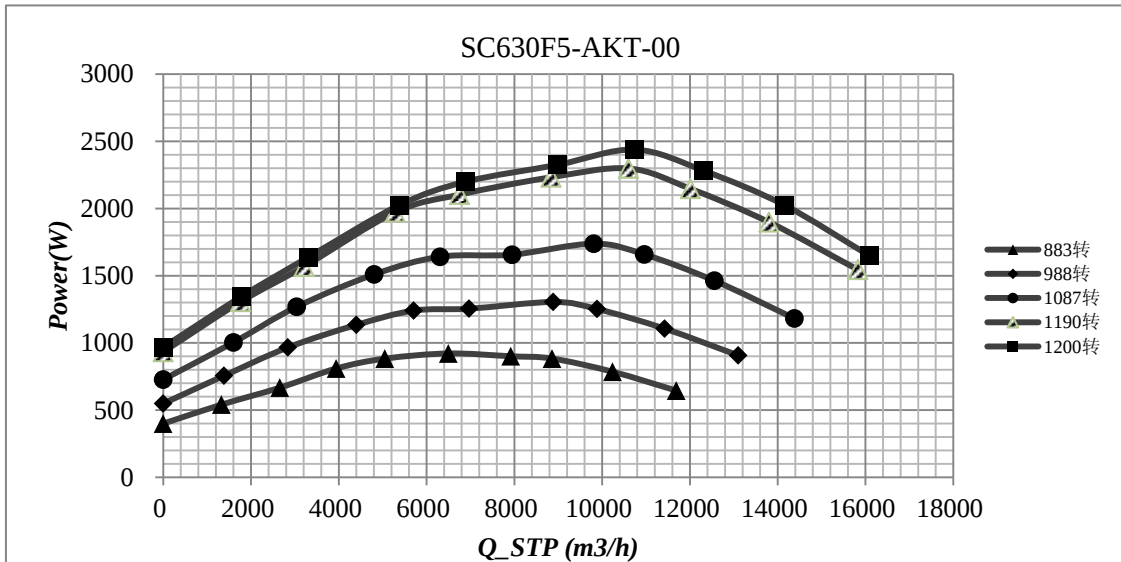
5.0 风机性能/Fan performance

5.1 标称参数/Rating data

输入电压 Input voltage [VAC]	频率 Frequency [Hz]	标准静压 Pstp [Pa]	输入电流 Input current [A] [$\pm 10\%$]	输入功率 Input Power [W] [$\pm 10\%$]	转速 Speed[r/min] [$\pm 10\%$]	风量 Air flow [m^3/h] [$\pm 10\%$]	噪音 Noise level [dB(A)] LP	绝缘等级 Insulation class
3~380	50/60	0	2.6	1600	1200	16000	85	F
		460	4.0	2450	1200	10800		

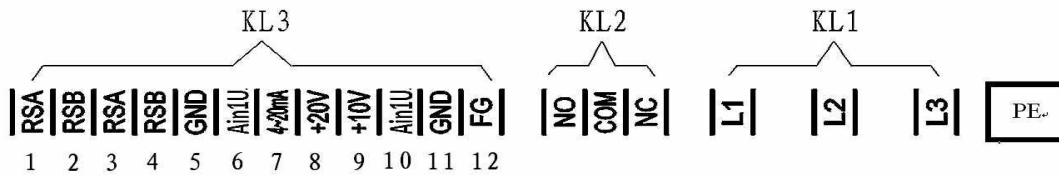
5.2 特性曲线/Performance curve (额定工作电压 3-380VAC 时/ Rating voltage 3-380VAC)





6.0 电气性能/Electrical performance

6.1 接线示意图/View lead connection



NO.	Pin	Signal	Assignment/Function	NO.	Pin	Signal	Assignment/Function
KL3	1/3	RSA	Bus connection RS485; RSA; MODBUS RTU	KL2	1	NO	Status relay, floating status contact; normally open; close with error
	2/4	RSB	Bus connection RS485; RSB; MODBUS RTU		2	COM	Status relay, common connection; contact rating 250VAC/2A(AC1)
	5/11	GND	Signal ground for control interface KL3		3	NC	Status relay, break with error
	6/10	Ain1U/PWM	Control input 0~10VDC/PWM; only usable as alternative to input 4~20mA	KL1	1	L1	Mains supply connection, supply voltage 3~380-480VAc;50/60Hz
	7	4~20mA	Analogue Control input 4~20mA; only usable as alternative to input 0~10V/PWM		2	L2	Mains supply connection, supply voltage 3~380-480VAc;50/60Hz
	8	+20V	Fixed voltage output 20VDC (+20% max. 50mA); power supply for ext. devices (e.g. potentiometer)		3	L3	Mains supply connection, supply voltage 3~380-480VAc;50/60Hz
	9	+10V	Fixed voltage output 10VDC (+10% max. 10mA); power supply for ext. devices (e.g. potentiometer)	PE		PE	Earth connection, PE connection
	12	FG	Speed Signal Feedback/ Fault Feedback				

6.2 电压范围/Voltage range

风机设计的额定运行电压为 3~380~480VAC，电压变化范围为 320~528VAC。

The fan is designed to operate at a nominal voltage of 3~380~480VAC, changing voltage from 320~528VAC.

6.3 速度控制/Speed control

6.3.1 单机模式/ stand-alone mode

6.3.1.1 线性电压: 0~10VDC (电流<20mA)

Linear voltage:0~10VDC,current less than 20mA;

6.3.1.2 PWM控制信号:幅值为:10V, 频率为: 1~10KHz,0~100%占空比; 起动占空比:12%±2%;

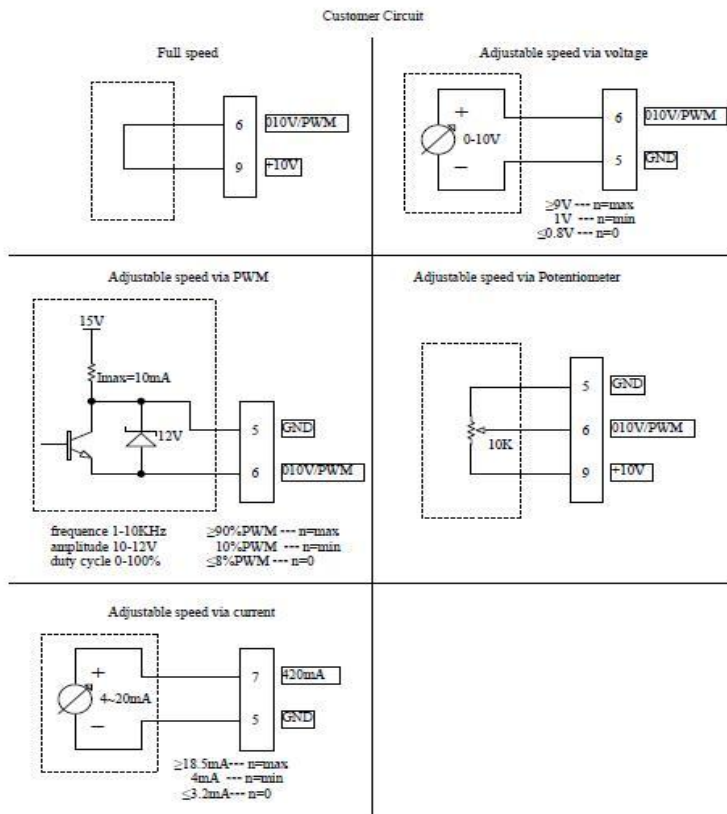
PWM control signal:Amplitude 10VDC,frequency:1~10KHz, 0~100%, duty ratio,start duty ratio:12%±2%;

6.3.1.3 线性电流: 4~20mA;

Linear current: 4~20mA;

当控制电压有效值大于 $1.1\pm0.2V$ 时,电机开始运转;当控制电压有效值大于 9V 时,电机全速运转;当风机运转时,控制电压有效值小于 0.8V 时,电机停止。注:以上控制电压为典型值。

When the effective value of control voltage is greater than $1.1\pm0.2V$,the motor starts up; when the effective value of control voltage is greater than 9V,the motor runs at the full speed; when the fan is running, if the effective value of control voltage is lower than 0.8V,the motor stops. Remarks: These effective values of control voltage are typical.



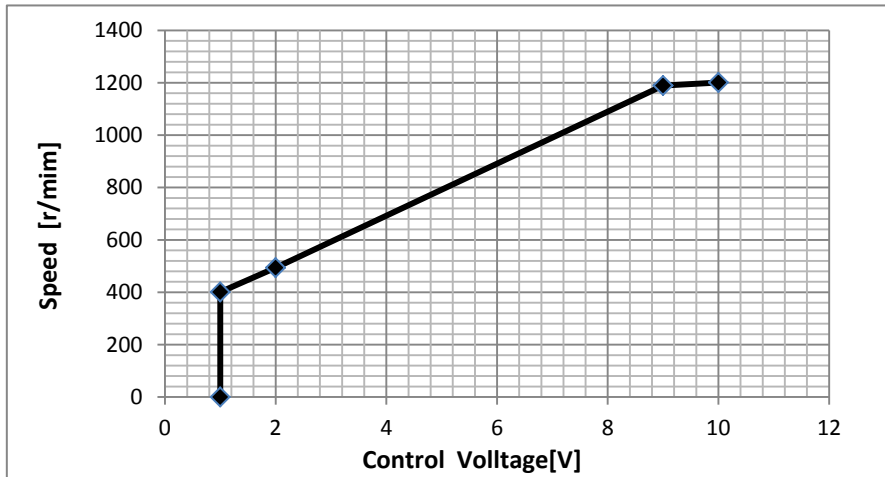
6.3.2 联机模式/online model:

通过RS485通信,使用MODBUS协议,一台上位机可同时控制255台风机;上位机可控制风机的启动、停止,设置风机的最大转速;同时风机向上位机反馈状态信息: 转速或故障状态/by RS485 communications and using MODBUS Protocol, a PC can also control the 255 fans; the computer be able to control fan of start, stop, set the max speed of the fan, and feedback status information: speed or a failed State;

注: 风机默认状态为单机模式,如要工作在联机控制模式,必须由上位机设定。风机工作在联机控制模式时,如掉电复位,则变为单机模式,如要工作在联机控制模式,要由上位机重新设置。

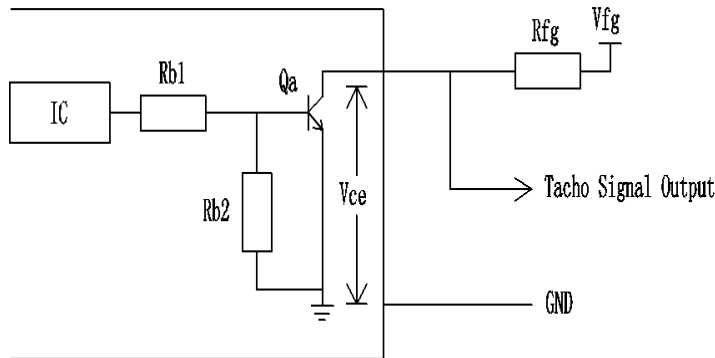
notes: fan in the default state is stand-alone mode, if you want to work in online mode, you must set by the computer. Fans work in online mode, such as the blackout reset, then becomes a stand-alone mode, if you want to work in online mode, to reset by the computer;

6.3.3 调速曲线(测试条件为: 线性电压: 0~10VDC)/ Regulate speed curve (Linear Voltage:0~10VDC)



6.3.4 风机具有速度输出信号, 输出信号波形图见下图, Vfg和上拉电阻为客户外接部分, $V_{fg}=(5\sim30)\text{ VDC}$, $R\geq 1000\cdot(V_{fg})\ \Omega$ 。

The fan provides a speed output signal, output signal drawing see under annex. Vfg voltage and pulling up resistor are connected by customer at out. $V_{fg}=(5\sim30)\text{ VDC}$, $R\geq 1000\cdot 9(V_{fg})\ \Omega$ 。



当风机待机时, 速度反馈输出低电平; 当风机故障时, 速度反馈输出高电平; 当风机运转时, 速度反馈输出占空比为50% 的方波, 频率与电机输入电流的频率一致, 根据公式 $n=60f/p$, 其中 n 为转速, f 为电机输入电流的频率, p 为极对数。本型号电机的极对数为5, 每转输出5个方波。

When the fan is in the standby mode, the signal of speed outputs low voltage; when the fan is in the error mode, the signal of speed outputs high voltage; when the fan is in normal operation, the signal of speed generates square waves of 50% duty cycle. The frequency of square waves is equal to the one of phase current. Base on the formula $n=60f/p$, n is speed, f is frequency, p is polar couples number. The motor has 5 polar couples, the fan outputs 5 pulses per revolution.

6.4 主要功能/main features

6.4.1 限流保护功能/The feature of overcurrent protection;

6.4.2 软启动功能/ soft-start function; 软启动延时时间<30秒达到全速/soft-start time delay time less than 30S reached full speed;

6.4.3 被动式PFC电路/ Passive PFC: 功率因素/power factor ≥ 0.7 ;

6.4.4 线路板过温保护功能/ circuit board over-temperature protection features;

当线路板的功率模块温度超过100℃, 风机停止运转, 当其温度恢复低于70℃时, 自动启动。

6.4.5 电机缺相保护/loss phase protection;

当电机缺相时, 风机停止运转。

6.4.6 堵转保护/ the locked motor protection;

当风机堵转时, 风机停止运行。

6. 4. 7 继电器报警输出/relay alarm output: 当风机出现母线电压过压、欠压、驱动电路过温、电机缺相故障时, 继电器公共触点由常闭触点接至常开触点/when fan bus overvoltage、under voltage、driver circuit over temperature 、motor loss phase, the relay public contacts from close regular contact connect to open regular contact;

6. 4. 8 辅助电源输出/ auxiliary power output: 输出10V±5%, 最大10mA /the output 10VDC, Max 10mA ;

6.5 绝缘等级/Insulation class

绝缘等级为F级/Insulation class is ‘ F ‘。

6.6 电磁兼容性/ Electromagnetic compatibility

传导发射符合 GB9254 规定; 谐波发射符合 GB17625.1 规定。

Conduct compatibility accord with GB9254; harmonics compatibility accord with GB17625.1.

6.7 绝缘电阻及电气强度/ Insulation resistance and strength

绝缘电阻及电气强度符合 GB/T21418 《永磁无刷电动机系统通用技术条件》规定/insulation resistance and strength accord with the GB/T21418 《Permanent magnet Brushless Motor System General technical requirements》;

7.0 质量要求/Quality requests

质量要求符合企业标准/Quality requests accord with FANS-TECH standard

8.0 产品标识/ Product marks

8.1 FANS-TECH 标志/ Logo FANS-TECH

☒ 要/ Yes, ☐ 不需要/ No;

8.2 铭牌标识/Nameplate drawing

	SC630F5-AKT-00		
	3-380~480 VAC	50/60 Hz	1200 r/min
	1.6 kW	2.6 A	
	IP 54	CLASS F	
	DM150F5-AKT-03		
	3-380~480VAC	50/60Hz	max 2.45kW max 4A



WARNING!



1. Dangerous voltages! Capacitor discharge time 5 minutes!
2. This product is solely intended as a built-in component Rotor and impeller are only basic-insulated. Please assure that it is not possible to get in direct contact with rotor and impeller when the unit is built-in.

9.0 包装和标识/ Packaging and marks

9.1 包装/Packaging

包装必须有确定的尺寸和合适的结构确保风机在运输过程中不会损坏。

The packaging has to be well dimension and structure, so that the fans for on normal transport could not be damaged.

9.2 标识/Marks

制造商名称、产品型号、重量、尺寸等。

Markings: Mark of manufacturer, type of fan, date of manufacture, weight, Size etc.

10.0 附件/Other requirements on accessory

10.1 导风圈/ Inlet cones

☒ 带/ Yes, ☐ 不带/ No,

型号为/model: TDFQ630000011

10.2 引出线

☐ 带/ Yes, ☒ 不带/ No,

☐ 电缆线/Cable, ☐ 组合线/wire;

警示语 /Warning:

- 1、运转中的风机会有大于3.5mA的泄漏电流，请确保风机有良好的接地；在须要带电操作时，人员必须穿带绝缘防护装备。
The leak current will exceed 3.5 mA during operation. Please make sure the fan is well-earthing. During the hot-line work, the worker must be with the equipment with insulation protection
- 2、电机、风机必须在规定的温度和湿度范围内使用，否则可能造成不可预测的损坏。
The fan and motor must be used within the prescribed scope of temperature and humidity otherwise it will cause an unexpected damage.
- 3、请务必使用铭牌指示的正确电压接入产品，否则会造成风机损坏。
Provide the right voltage according to the nameplate otherwise it will damage the product.
- 4、电机接线必须按接线图的指示，有接地线要求的产品请务必接上地线，不建议客户使用延长线，所有不按指示接线都可能造成电机烧坏。
Wiring depends on the wiring diagram and please connect the earth ground if required. we don't suggest to use the extension cord .Any wrong connection may cause the damage of the fan .
- 5、在移动产品的时候，不得以风机扇叶为受力点搬运产品，否则会造成扇叶变形而使风机运转时震动过大。
Be careful when moving the fan and do not take the blades as a handle because it will cause the distortion and chatter.
- 6、对于有接温控器要求的风机，请务必接上带温控器的引线，否则有可能造成电机内部温度过高而损坏。
Connect the thermostat if required otherwise it would damage the motor because of the over temperature.
- 7、使用的安装螺丝不得超过要求长度，否则会造成风机损坏。
The length of the mounting screws shall not exceed the requirement, otherwise the fan will be damaged.
- 8、请不要自主拆装风机，否则将影响扇叶平衡、防水等效果，严重的将引起安全问题。
Do not disassemble the fan arbitrarily. It may hurt the capacity of water tightness and dynamic balance or cause other serious problems.
- 9、风机的电气连接必须有合适的过流保护器以防止电流过大对产品造成损坏。
The over current protector is necessary in case the damage from the over current.
- 10、请按风机的建议安装方向安装产品，任何不按产品的要求来安装将会影响风机的使用寿命。
Install the fan as required ,any other installing direction would affect the service life of the product.
- 11、带导风圈的风机需按照推荐尺寸设计和安装，否则将影响产品性能。
The fan with inlet ring should be installed follow the requirements or it will affect the performance.
- 12、对于未带电缆线之风机，客户所接电缆线的外径需在要求的范围内，否则将影响防水效果。
Users should use the standard cable when install the fan other wise it will affect the water tightness.
- 13、风机请安装在儿童不能接触到扇叶和带电部品的地方，也不允许儿童单独使用本产品。
The fan should keep away from the children especially the blade and electric parts .And the children are not allowed to operate the fan alone.

未按以上条例安装及使用风机，所造成的机器损坏或者事故，我公司均不承担任何责任。敬请知悉！

Please be informed that we are not responsible for any damage or accidents caused by violating above rules to install and operate the fan.