



宁波狮球通风机电有限公司
NINGBO LIONBALL VENTILATOR CO., LTD.

规格书编号: LB202405-001

产 品 规 格 书
Product Specification

名 称 (NAME): EC轴流风机 EC Axial fan

型 号 (MODEL): EC180G800SC

编 制 (Compile): 何伟雄

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审 核 (Audit): 张建洪

批 准 (Approved): 周利平

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版本号 Version No.	换版原因 Reason for revision	修订内容 Resvised Contents	修订人 Revised by	日期 Date
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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 standards, operating environment, and technical requirements of the product

2.0 产品标准和安规要求/Requirements of product standards and safety regulations

2.1 本产品符合的标准/The product meets the standards

2.1.1 EN60335-1 《家电和类似用途电器的安全要求》

EN60335-1 Safety requirements of household and similar electrical appliances

2.1.2 GB14711 《中小型旋转电机安全通用要求》

GB14711 Safety requirements of small and medium size rotating electrical machines

2.1.3 JB/T10562-2006 《一般用途轴流风机通用技术条件》

JB/T10562-2006 General technical requirement for general axial fan

2.1.4 JB/T 8689 《通风机振动检测及其限制》

JB/T 8689 Fan vibration detection and its limit value

2.2 本产品全部材料符合RoHS或REACH要求。

All materials accord with RoHS or REACH.

2.3 本产品通过以下认证/Certification

☐ UL+cUL (待认证)

☐ CE-LVD

☐ CE-LVD+EMC

☒ CE-EMC

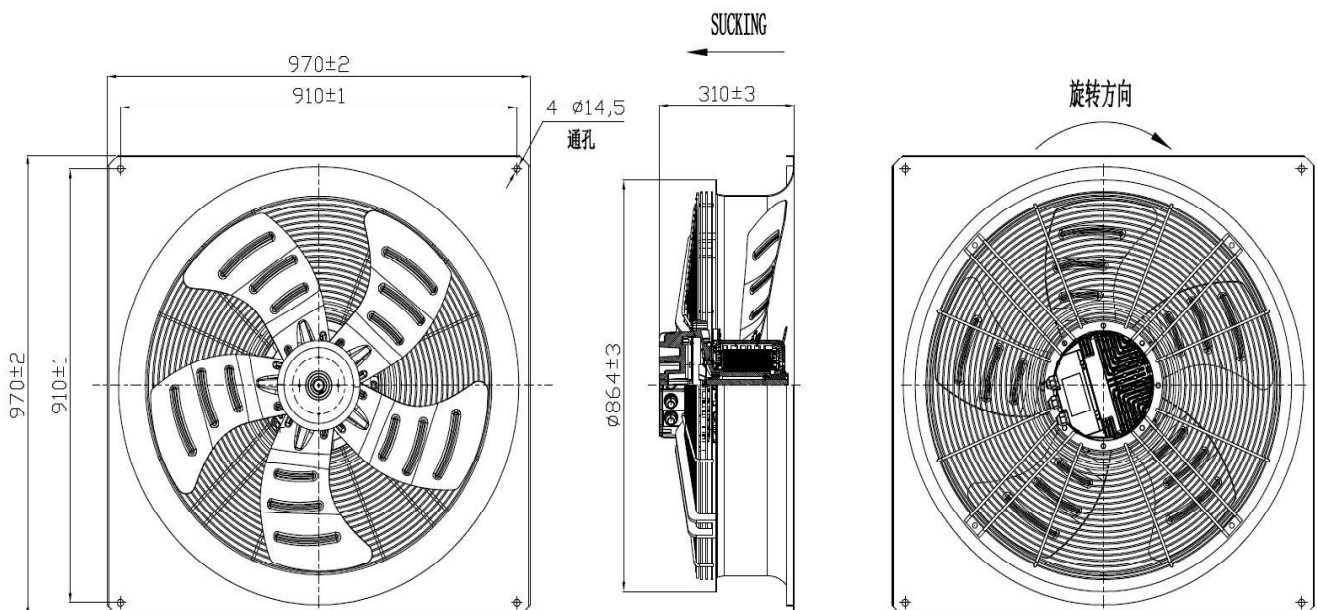
☐ TUV

☒ CCC

☐ 其他 Others

3.0 机械要求/Mechanical requirements

3.1 外形图





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3.2 材质/Materials

网罩: 钢, 表面喷哑光黑; 导风面板: 冷轧板, 表面喷哑光黑;

风叶: 钢, 表面喷哑光黑; 转子: 电泳, 黑色

Fan guard: Steel, and coated in matt black; Inlet ring: Cold-roll sheet steel and coated in matt black;

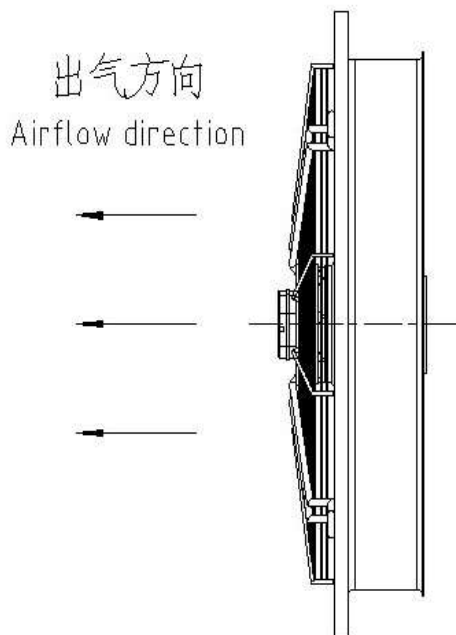
Impeller: Steel, coated in matt black;

Motor shell: Coated in black.

3.3 安装方向/Installation direction description:

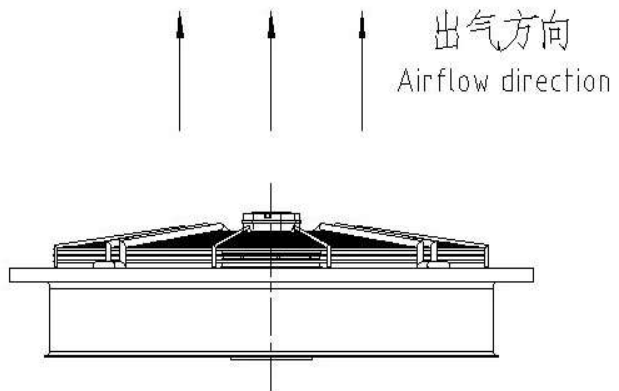
风机可采用以下两种安装方式, 安装后, 风机周围结构件与风机叶轮之间的距离不小于15mm

The fan can be installed in either of the following ways. After installation, ensure that the distance between the structural parts around the fan and the fan impeller is no less than 15mm.



轴水平安装

Shaft horizontal installation style



轴垂直安装

Shaft vertical installation style



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3.4 轴承/Ball bearing

免维护滚珠轴承/Maintenance free ball bearing

3.5 平衡/Balancing

在 $550 \pm 10\%$ r/min运转时, 每个端面动平衡精度不低于平衡品质等级G6.3

When the fan is running at $550 \pm 10\%$ r/min, the dynamic balance accuracy of each end side is not lower than the balance quality grade G6.3

3.6 振动/Vibration of the fan

风机振动速度有效值按照JB/T8689标准规定

Vibration speed virtual value of fans accord with JB/T8689.

3.7 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 , 风机全速运转条件下)

The designed lifespan of the fan is 40000 hours assuming the fan is running at rated voltage, full speed and 40°C environmental temperature

3.8 产品净重/Net Weight

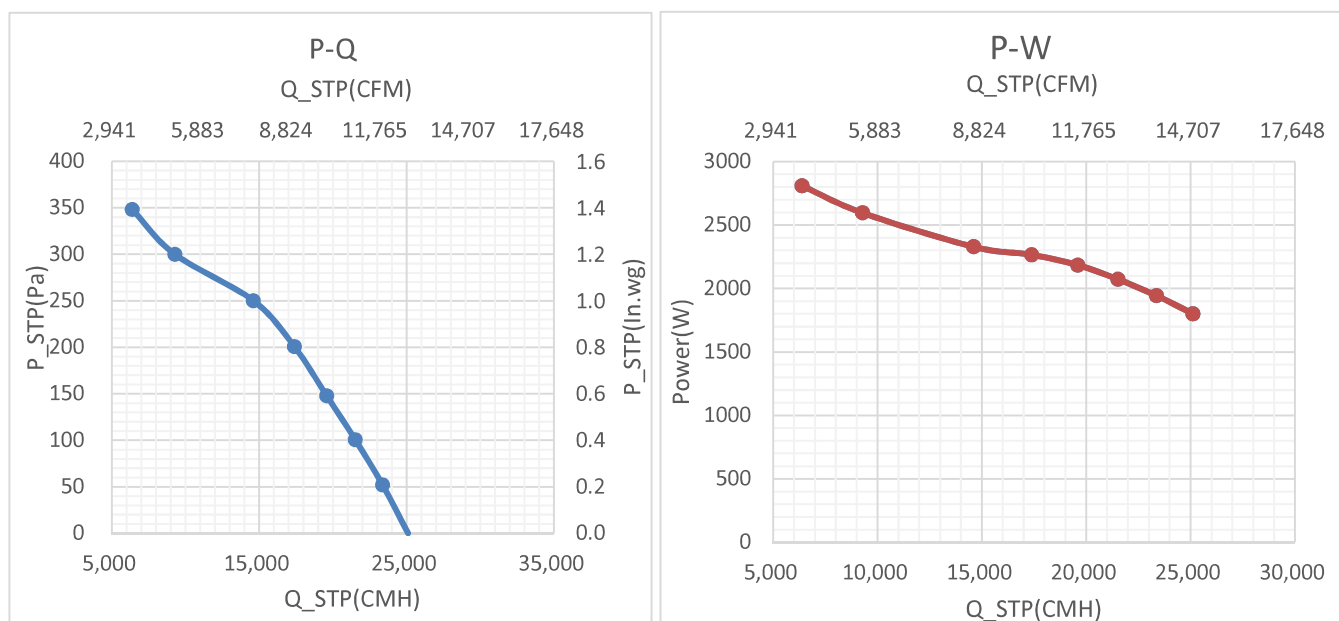
Net weight: 约 Kg

4.0 风机性能/Fan performance

4.1 性能参数/Performance data

额定电压 Rate Voltage (V)	工作电压范围 Nominal voltage range	频率 Frequency (Hz)	输入电流 Current draw (A $\pm 10\%$)	输入功率 Power input (W $\pm 10\%$)	转速 Speed (r/min $\pm 10\%$)	风量 Air flow ($0\text{Pa m}^3/\text{h} \pm 10\%$)	噪音 Noise level [Lp Db(A)]
3[PH] 400	380-480VAC	50/60	3.14	1800	1100	25100	<83

4.2 特性曲线/Performance curve(s)





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5.0 电气性能/Electrical performance

5.1 产品标识/Products Label



警告标识/Warning drawing:



5.2 接线图/Wiring diagram

序号	脚位	标记	定义/功能	序号	脚位	标记	定义/功能
No.	Pin	Signal	Assignment/Function	No.	Pin	Signal	Assignment/Function
KL3	1	24V	+24VDC辅助电源输入正极; Fixed voltage output 24VDC ($\pm 2V$ max. 5mA); power supply for ext. devices (e.g. potentiometer)	KL2	1	ON	继电器常开端, 在正常运行或未 上电时, 与COM处于断开状态; 风 机故障时与COM闭合。 The normally open terminal of the relay is disconnected from COM during normal operation or not powered on, when the fan fails, it is closed with COM.
	2	GND	24VDC辅助电源输入负极; 24VDC auxiliary power input negative		2	COM	报警继电器公共端; Status Relay, common connection; contact rating 250VAC/2A (AC1).
	3	PWM	PWM控制信号输入; Control Signal For PWM input		3	NC	继电器常闭端, 在正常运行或未 上电时, 与COM处于闭合状态; 风 机故障时与COM断开; The normally closed terminal of the relay is closed with COM during normal operation or not powered on, when the fan fails, it is disconnected from COM.
	5	GND	控制信号参考端; Signal ground For Control Interface KL3	KL1	1	T	主电源输入端, 电压3[PH]-380~ 480VAC $\pm 10\%$; 50/60Hz $\pm 1\%$, 需 要客户配空气开关, 或慢断保险 管20-25A; Mains supply connection, supply voltage 3[PH]-380~ 480VAC $\pm 10\%$; 50/60Hz $\pm 1\%$; Need customer use air switch or time-lag fuse 20-25A.
	6	10v	控制信号10V输出 Control Signal 10V output		2	S	
	7	VSP	VSP控制信号输入 Control Signal For VSP input		3	R	
	8	FG	速度/故障输出反馈; Speed Signal Feedback / Fault Feedback				
	9/11	RSA	RS485接口RSA; Bus Connection RS485; RSA; MODBUS RTU				
	10/12	RSB	RS485接中RSB; Bus Connection RS485; RSB; MODBUS RTU				



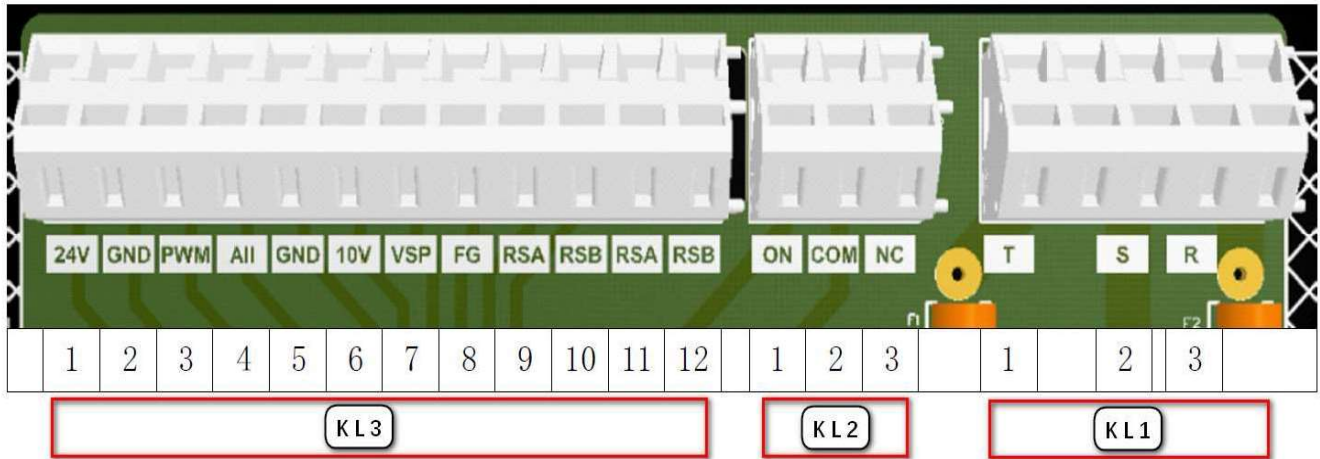
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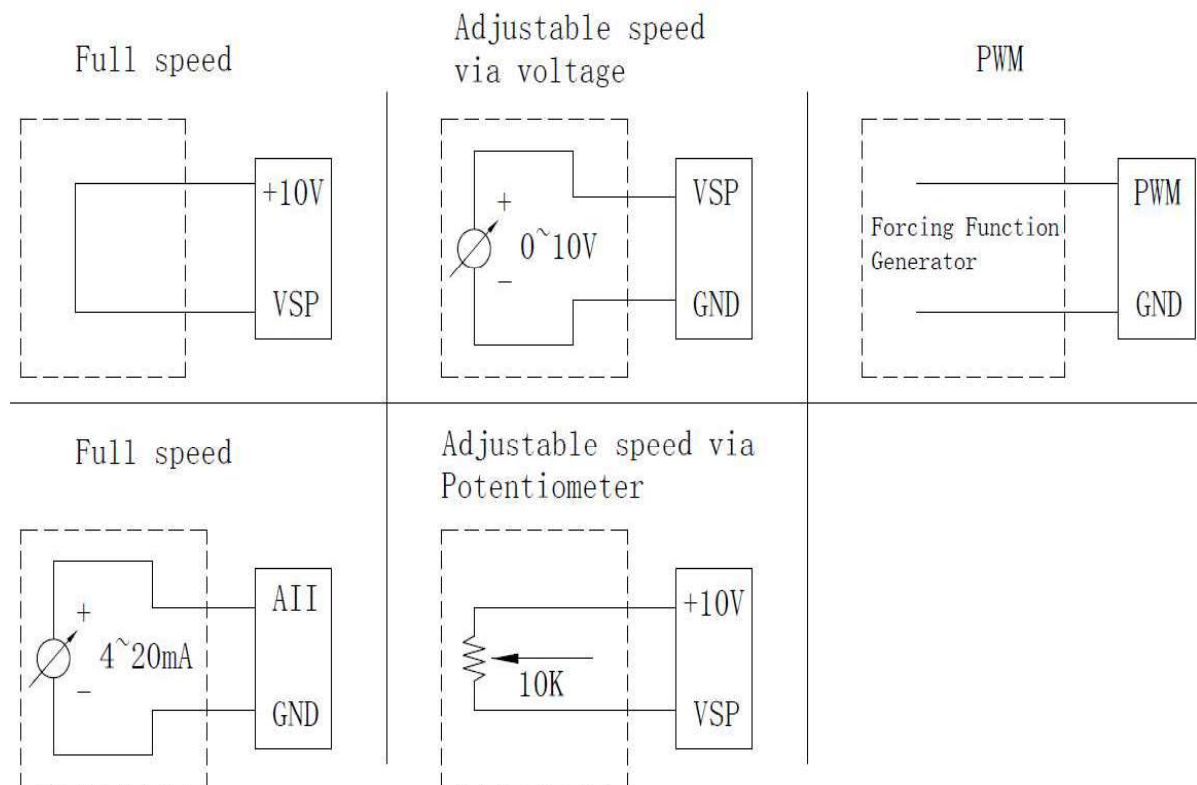
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附接线说明图 / For other interfaces, please refer to the wiring diagram:



给客户的使用建议，强电线（三相电源线）和弱电线（控制信号线）出线后最小距离30cm。

In addition the suggestions to customers, the minimum distance between strong power cables (three-phase cables) and weak power cables (control signal cables) is 30cm.





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5.3 电压范围/Voltage range

风机设计的额定运行电压为380~480VAC，可运行的电压范围是320~520VAC

The fan is designed to operate at a nominal voltage of 380~480VAC, but it can be operated in the tange of 320~520VAC.

5.4 ErP 指令/ErP Directive

		实际值\ Actual	标准值ERP2020\ \ ERP2020 Requirement
最高效率\Overall efficiency η_{es}	%	46.29	
N等级\Efficiency grade N		42	42
效率类别\Efficiency category	静止\Satic		
测试类别\Measurement category	A		

5.5 主要功能/Technical features

5.5.1 软起动/Soft start

电机以低转速起动，大约50秒到达全速，以减少对电源的电流冲击

The motor starts at low speed and reaches full speed after 50 seconds' running for reducing power supply current surge

5.5.2 过流保护/Over-current protection function

具有电流过流保护功能

The fan have Overcurrent protection

5.5.3 堵转保护/Locked-rotor protecting function

启动或运行状态下，风机风轮被堵转时，控制器停止输出，风机即可停止。堵转后风机按初始启动状态进行重复启动，启动次数无限制，堵转保护启动时间间隔为 30s。

In the start-up or operation state, when the impeller is locked, the controller stops output and the fan can stop. After be locked, the fan can be started repeatedly and there is unlimited. After the rotation is blocked, the fan starts again according to the initial starting state, the number of starts is unlimited, and the starting interval of the rotation blockage protection is 30s.

5.5.4 极性保护功能/Polarity protection function

风机具有极性保护功能

The fan has poarity protection function

5.5.5 过欠压停止运转保护功能/under-voltage and over-voltage lockout protection function

风机具有过欠压停止运转保护功能

The fan has under-voltage and over-voltage lockout protection function



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5.5.6 限功率保护/Power limit protection

风机具有限功率保护功能

The fan has power limit protection

5.5.7 限速保护/Speed limit protection

风机具有限速保护功能

The fan has speed limit protection

5.5.8 速度控制/ Speed Control

PWM控制信号/ PWM control signal

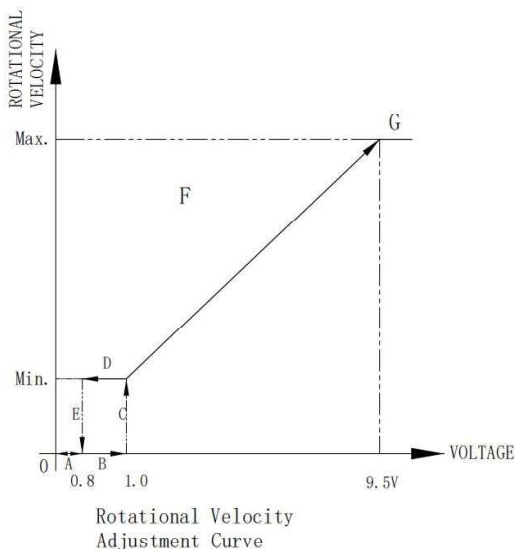
风机采用PWM调速，电压幅值为：10V~10.5V；频率范围：1~10KHz；最低占空比有效值在10%±2%，电机开始运转；低于启动占空比数值2%时，风机停转；当占空比值效在90%~100%时，电机全速运转；输入的电压幅值应小于12V，以免损坏控制器。

The axial fan adopts PWM speed regulation, and the PWM signal voltage amplitude is: 10V~10.5V; the frequency range is: 1~10KHz; the minimum duty cycle effective value is 10%±2%, and the motor starts to run; when the value of the starting duty ratio is lower than 2%, the fan stops; when the effective value of the duty cycle is between 90%~100%, the motor runs at full speed; the input voltage amplitude should be less than 12V to avoid damage to the controller.

线性电压：0~10VDC / Linear voltage: 0~10VDC

最低控制电压有效值在 $1.0 \pm 0.2V$ 时，电机开始运转；低于最低控制电压 0.2V 时，风机停转；当控制电压有效值在 9.5V 时，电机全速运转；输入的最大控制电压应小于 12V，

When the RMS of the minimum control voltage is $1.0 \pm 0.2V$, the motor starts to run; when the voltage is lower than the minimum control voltage of 0.2V, the fan stops; when the effective value of the control voltage is 9.5V, the motor runs at full speed; the maximum control voltage input should be less than 12V to avoid damage to the controller.





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线性电流: 4~20mA / Linear current: 4~20mA

最低控制电流有效值在 $5\text{mA} \pm 1\text{mA}$ 时, 电机开始运转, 低于最低控制电流 1mA 时, 风机停转;

当控制电流有效值在 $18.5 \sim 20\text{mA}$, 电机全速运转; 输入的最大控制电流应小于 25mA , 以免损坏控制器。

When the RMS of the minimum control current is $5\text{mA} \pm 1\text{mA}$, the motor starts to run; when the current is lower than the minimum control current of 1mA , the fan stops; when the effective value of the control current is $18.5 \sim 20\text{mA}$, the motor runs at full speed; the maximum control current input should be less than 25mA to avoid damage to the controller.

5.5.9 线路板过温保护功能 / Circuit board over-temperature protection features

当IPM模块达到第一层限定温度时, 风机会降额运行; 当第一层保护没有能使IPM模块温度降低, IPM模块达到第二层限定温度时, 风机会停止运行。

When the IPM module reaches the first layer of defined temperature, the fan deceleration runs. When the first layer of protection does not reduce the temperature of the IPM module and the IPM module reaches the second layer of defined temperature, the fan stops running.

5.5.10 泄漏电流 / Leakage current

泄漏电流 $\leq 3.5\text{mA}$ /Leakage current: $\leq 3.5\text{mA}$;

5.6 绝缘等级: F

Insulation Class: F

5.7 防护等级: IP54

Protection Class: IP54

6.0 使用和存储环境/Operating and storing environmental requirements

6.1 使用环境/Operating environmental requirements

使用温度范围/Operating temperature range: $-40 \sim 65^{\circ}\text{C}$

使用湿度范围/Operating humidity range: $5\% \sim 95\text{RH}$

海拔高度/Operating altitude: $\leq 1000\text{m}$, $1000\text{m} \sim 4000\text{m}$ (降额使用)

6.2 贮存环境/Storing environmental requirements

贮存温度范围: $-40 \sim 70^{\circ}\text{C}$, 贮存湿度范围: $5\% \sim 95\text{RH}$

Storing temperatures range: $-40 \sim 70^{\circ}\text{C}$, storing humidity range: $5\% \sim 95\text{RH}$



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7.0 包装盒标识/Packaging and marks

7.1 包装/Packaging

纸箱包装/Carton packaging

7.2 标识/Marks

制造商名称、产品型号、重量、尺寸等

Markings: Name of manufacturer , fan model, date of production , weighth, dimensions, etc

8.0 配附件/Other requirements on accessory

导风面板 / Inlet cones and panel	有 / Yes
防护网罩 / Fan guard	有 / Yes
连接器组件/Annectent	无 / No
端子/Terminal	无 / No
连接器/Linker	无 / No
电源线/Power cable	无 / No
信号线/Signal wire	无 / No

9.0 其他 / Other

10.0 保质期以双方约定的协议为准。/The warranty period is subject to the agreement agreed by both parties.



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警示语 /Warning:

在使用产品之前, 请仔细阅读以下说明, 遵守以下警告, 以防止发生故障或对人员造成危险。以下标志表示存在潜在危险。/ Read these instructions carefully before starting work on the device. Observe the following warnings to prevent malfunctions or danger to persons.



危险/ DANGER:

表示在紧急的情况下, 如不采用指定的措施, 会导致死亡和重伤, 必须遵守说明。/Indicates an imminently hazardous situation which will result in death or serious injury if the specified actions are not taken. Compliance with the instructions is imperative.

- 1) 没有防护, 在操作过程中, 手、衣物、长头发可能会卡在设备中, 从而导致严重伤害。/Without protection hands, clothing, and long hair may get stuck in the device, resulting in serious injury during operation.
- 2) 风机请安装在儿童不能接触到扇叶和带电部件的地方, 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.

警告/ WARNING:

表示潜在的危险情况下, 可能导致死亡或严重伤害, 工作格外小心。/ Indicates a potentially hazardous situation which can result in death or serious injury if the specified actions are not taken. Exercise extreme caution while working.

- 1) 产品在安装、拆卸过程中可能打滑、掉落, 可能会导致致命或严重的伤害以及财产损失, 设备严重损坏。/The product may slip and fall during installation and disassembly, which may result in fatal or serious injury, property damage, and serious damage to the equipment.
- 2) 噪音可能超过 $L_p: 70\text{dB(A)}$ 时, 有引起听力损失的风险。/ the sound pressure level may exceed 70dB(A) . Risk of noise-induced hearing loss.

警戒/ CAUTION:

表示潜在的危险情况下, 如果不采取指定的措施, 可能会导致轻度或中度伤害或财产损失。/Indicates a potentially hazardous situation which can result in minor or moderate injury or damage to property if the specified actions are not taken.

- 1) 从包装中取出风扇时有割伤和压伤的危险。/Cutting and crushing hazard when removing fan from packaging.

注意/ NOTE:

可能会发生潜在的有害情况, 如果不避免, 可能会导致财产损失。/A potentially harmful situation can occur and, if not avoided, can lead to property damage.

- 1) 包装运输仅以原始包装运输。在原始包装中, 清洁的环境中保护其不受天气影响, 并且不受振影响。/ Transport the device in its original packaging only. protected against the weather and free from vibration, in the original packaging in a clean environment.
- 2) 在客户端进行安装时须满足可能出现的机械、温度及使用寿命相关的应力要求。/ When installing at the client, it must meet the mechanical, temperature and service life-related stress requirements that may occur
- 3) 在接入设备前, 请检查数据连接、输入的电压是否与铭牌相匹配。/Before connecting to the device, check whether the information on the nameplate matches the connection data, and make sure the power supply matches the device voltage.
- 4) 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.
- 5) 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.
- 6) 请不要自主拆装风机, 否则将影响动扇叶平衡、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 watertightness and dynamic balance or cause other serious problems.
- 7) 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.
- 8) 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 otherwise it will affect the watertightness.



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危险/ DANGER:

表示带电设备，触电危险。 / Electrically charged device, Risk of electric shock

警告/ WARNIN:

设备关闭，重新启动，有触电的危险。 / Live terminals and connections even with device switched off, Electric shock



警戒/ CAUTION:

发生故障时，给电机或风机通电或者在停电后，如果设备设置有控制电压或者存储速度值，电机将自动重启，有受伤的风险。 / When a fault occurs, power on the motor or fan or after a power failure, if the device is set with a control voltage or stored speed value, the motor will automatically restart, there is a risk of injury.

警戒/ CAUTION:

表示外壳表面高温，有烫伤危险和着火危险。 / High temperature on electronics housing Risk of burns

1) 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.

2) 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.

3) 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 overcurrent protector is necessary in case the damage from the overcurrent.