产 品 规 格 书

PRODUCT SPECIFICATION

名 称(NAME)： 离心风机 centrifugal fan

型 号(MODEL)： SC560F5-AKT-00

软件型号(SOFTWARE): EICEC00000ZL0

配置代码(CONFIGURATION CODE)： **004**（通用）

版 本 号(VERSION NUMBER)： A/4

泛仕达机电股份有限公司 技术中心

编 制 (PREPARED BY): 邹小见 2019.10.23

校 对 (CHECK)：黄观淼 2019.10.23 李剑林 2019.10.23

审 核 (REVIEW): 尚利歌 2019.10.23

审批 2019.11.01 技术中心

批 准 (APPROVE): 张小锋 2019.10.30

客户名称或代号（CUSTOMER CODE& NAME）：

客户确认（CUSTOMER CONFIRMATION）：

日 期(DATE)：

泛 仕 达 机 电 股 份 有 限 公 司
FANS-TECH ELECTRIC CO.,LTD.

换版记录/ Records of revision

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	原版带通讯		吴兆堂	2016-4-9
A/1	更新插图	更新调速曲线	吴兆堂	2016-4-12
A/2	更新引用标准 更新插图 更新部分内容	1、 GB14711更改为GB4706.32-2012 2、 更新调速曲线 3、 增加噪音值公差	吴兆堂	2017-8-3
A/3	更新部分内容	1、 增加软件型号和描述； 2、 增加规格书编号	吴兆堂	2018-10-10
A/4	软件程序更新	(1)增加通信功能描述； (2)顺逆风起动能力 600 转以上； (3)修改欠压保护阈值。	邹小见	2019-09-24

1. 目的/ Purpose

本规格书规定了产品规格细节要求、技术标准或技术要求等。

This specification provides part specific requirements and the Engineering Standard and/or Engineering requirements.

2. 产品设计准和安规要求/ Engineering standard and safety regulations

2.1 本产品符合的标准 / Engineering standard

2.1.1 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*

2.1.2 JB/T10563《一般用途离心通风机技术条件》

JB/T10563 *Technical specification for general purposes centrifugal fans*

2.2 本产品全部材料符合 RoHS 或 REACH 要求。

All materials accord with RoHS or REACH.

3. 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℃～+60℃，工作湿度范围:5%～95% RH。

Operating temperatures range -25℃～+60℃,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℃～+60℃ ，贮存湿度范围: 5%～95% RH。

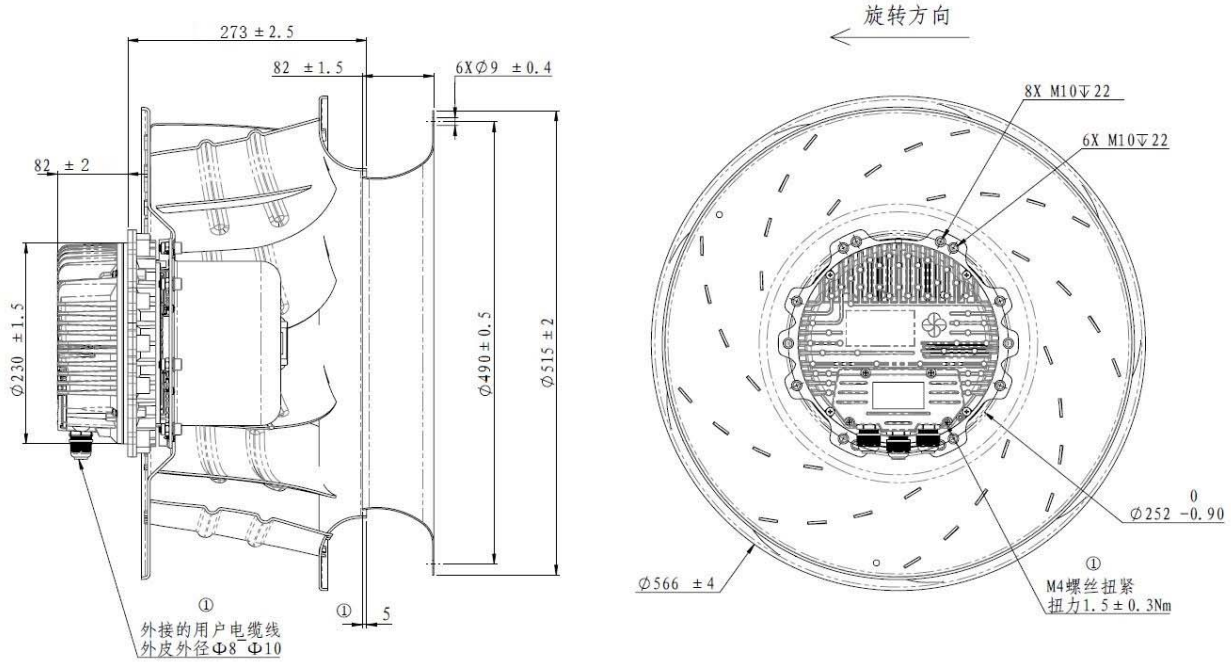
Storage temperatures range -25℃~ +60℃, storage humidity from 5% to 95% RH.

4. 单风机重量(净重)约: 30 Kg /台

Weight(Net weight): about **30** kg/pcs

5. **机械要求/ Mechanical requirements**

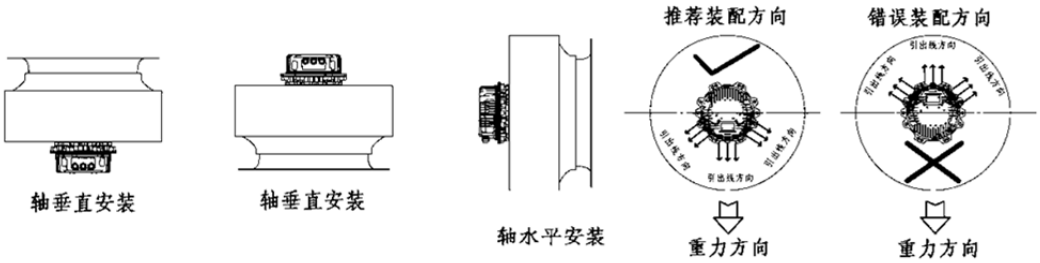
5.1 外形图/Dimension drawing



① :给客户的使用建议；

5.2 安装方向/ Installation direction description:

可以进行轴水平和轴垂直安装/ Shaft level and axis vertical mounting



5.3 叶轮/Impeller

叶轮由铝合金材料制成.

Impeller made of Aluminum alloy.

5.4 电机/Motor

外转子可调速永磁同步电动机。电机型号: DM150F5-AKT-02-001

External rotor , adjustable-speed permanent magnet synchronous motor.

the motor model is DM150F5-AKT-02-001.

5.5 软件/software

本产品内嵌风机驱动软件,软件为: EICEC00000ZL0.。

Fan driver software is embedded within this product and the software is EICEC00000ZL0.

5.6 平衡/ Balancing

风机在 1500±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 1500±10%r/min, the dynamic balance accuracy of each end side is not lower than the balance quality grade G6.3。

5.7 振动/Vibration of the fan 风机振动速度有效值≤4.6mm/s,按照JB/T 8689标准规定。

The fan vibration speed virtual value is less than or equal to 4.6mm/s, according to JB/T 8689 standard.

5.8 电机防护等级/ motor Type of protection

电机的防护等级为 IP54。Ingress protection class is IP54.

5.9 寿命/ Life expectance

在额定电压、环境温度40℃、风机全速连续运转时，预期寿命为40,000小时。(根据应用产品实际工况，预期寿命会有不同。) The life expectancy is 40,000 hours at rated voltage, ambient temperature of 40 ° C, and continuous operation of the fan at full speed. (According to the actual working conditions of the product, the life expectancy will be different).

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.

6 风机性能/Fan performance

6.1 标称参数/Rating data（在室温为25℃，相对温度为85%RH时测试 Tested at room temperature of 25 ° C and relative temperature of 85% RH**)**

额定电压 Rated voltage [VAC]	频率 Frequency [Hz]	额定电流 Rated Current draw ±10% [A]	额定功率 Rated Power ±10% [W]	额定转速 Rated Speed ±10% [r/min]	风量 Air flow ±10 % [m3/h]	噪音 Noise (+3/-7） [LpdB(A)]	绝缘等级 Insulation class
3~380	50/60	2.7	1750	1500	12500	85	F

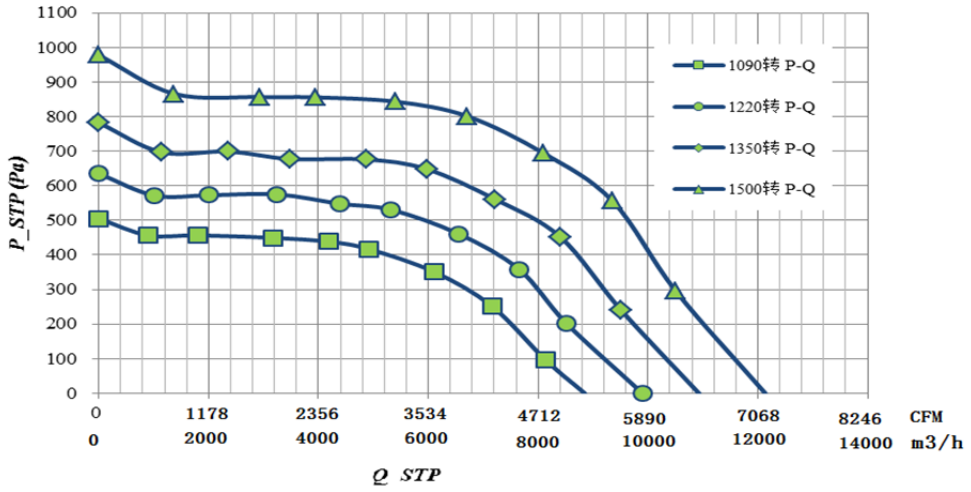
备注：额定电流及额定功率参数是风机带导风圈在 0Pa 状态下运行参数。风量按我司风洞测量值；噪音是在噪音房里，轴水平放置风机,离风机进风口 1 米处测试。

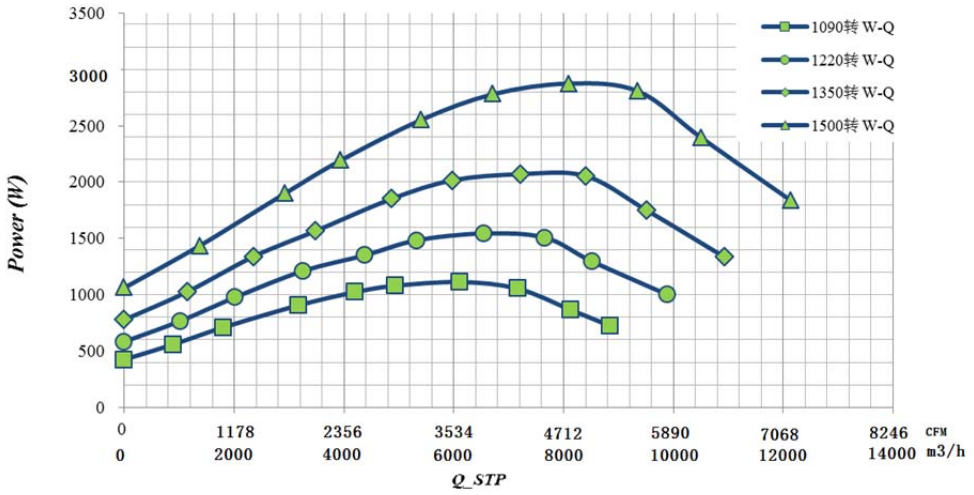
Note: The rated current and rated power are the parameters of the fan with the guiding ring running at 0Pa.. The airflow is measured in the wind tunnel, the noise is tested in a horizontal position in the noise test room, with 1m distance to the air inlet of the fan.

6.2 最大电流点参数（供参考）Parameters at maximum current point (For reference)

额定电压 Rated voltage [VAC]	频率 Frequency [Hz]	最大电流 Current draw [A]	输入功率 Power input [W]	转速 Speed [r/min]	静压 Pst [Pa]	风量 Air flow [m3/h]
3~380	50/60	5	3000	1500	694	8094

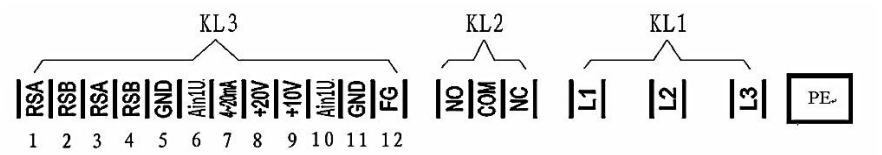
6.3 特性曲线/Performance curve



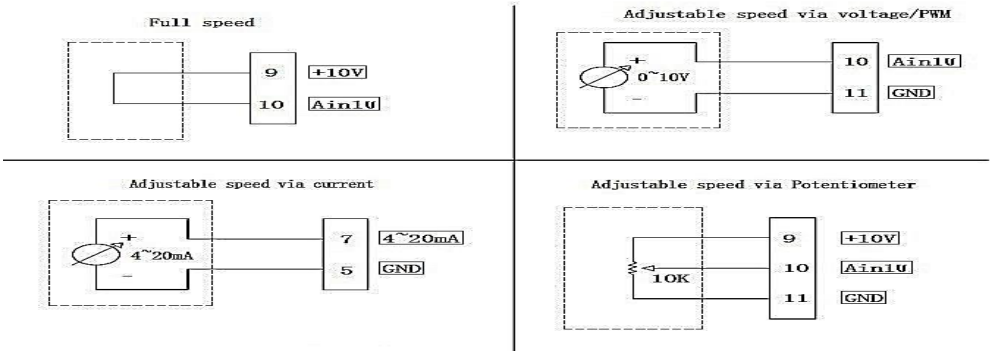


7 电气性能/Electrical performance

7.1 接线示意图/View lead connection



序号 NO.	脚位 Pin	标记 Signal	定义/功能 Assignment/Function	序号 NO	脚位 Pin	标记 Signal	定义/功能 Assignment/Function
KL3	1/3	RSA	RS485接口RSA; Bus connection RS485; RSA; MODBUS RTU	KL2	1	NO	继电器常开端，在未上电和风机正常运行时，与COM处于断开状态；风机故障时与COM闭合。 The relay is normally open,the fan is not powered and normally operation,open with COM; the fan is fails,closed with COM.
	2/4	RSB	RS485接口RSB; Bus connection RS485; RSB; MODBUS RTU		2	COM	报警继电器公共端 Status relay, common connection; contact rating 250VAC/2A(AC1)
	5/11	GND	控制信号参考端; Signal ground for control interface KL3		3	NC	继电器常闭端,在未上电和正常运行时，与COM处于闭合状态；风机故障时与COM断开。 The relay is normally closed,the fan is not powered and normally operation,closed with COM; the fan is fails,open with COM.
	6/10	Ain1U	0~10VDC/PWM调速输入; Control input 0~10VDC/PWM; only usable as alternative to input 4~20mA	KL1	1	L1	主电源输入端,电压 3~380±20%VAC;50/60Hz; Mains supply connection, supply voltage 3~380±20%VAC;50/60Hz
	7	4~20mA	4~20mA电流调速输入; Analogue Control input 4~20mA; only usable as alternative to input 0~10V/PWM		2	L2	
	8	+20V	+20VDC辅助电源输出; Fixed voltage output 20VDC (±2V max. 20mA); power supply for ext. devices (e.g. potentiometer)		3	L3	
	9	+10V	+10VDC辅助电源输出; Fixed voltage output 10VDC (±1V max. 5mA); power supply for ext. devices (e.g. potentiometer)	PE		PE	大地接口; Earth connection, PE connection
	12	FG	速度/故障输出反馈 Speed Signal Feedback/ Fault Feedback				



7.2 电压范围/Voltage range

风机设计的额定运行电压为 380-480 V，可运行的电压范围是 304-520 V。欠压保护阈值 280VAC，风机运行中三相输入电源缺相或掉电小于 2S，风机不间断运行。

The fan is designed to operate at a nominal voltage of 380-480 V but can be operated in the AC supply voltage range of 304-520 V. The under-voltage protection threshold is 280VAC, and the three-phase input power supply is out of phase or power failure is less than 2S during fan operation, and the fan runs continuously.

7.3 主要功能/Main features

7.3.1 软启动功能/ Soft start

电机以低转速起动，小于30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 speeda after less than 30s running for reducing power supply current surge.

7.3.2 顺逆风启动功能/ downwind and upwind start function

风机在顺风或逆风转动600转以下的情况下能启动。

The fan can start to rotate below 600 rpm in the downwind or in the upwind

7.3.3 过流保护功能/ Over-current protection function

风机具有电流过流保护功能.

The fan has overcurrent protection.

7.3.4 升温减额运行,驱动模块过温保护功能。

Driving module over-temperature protection function when operates under rising temperature.

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.

7.3.5 电源缺相保护功能/ Power phase loss protection function

电源缺相时，停止驱动输出。

Power phase loss, stop driving output.

7.3.6 继电器输出/ relay output

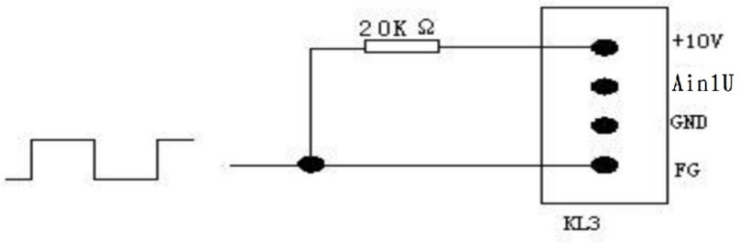
当输入电压过压（540±20VAC）、欠压（280±20VAC）、驱动模块过温、电源缺相，继电器公共接点接到常开触点。

Under the situation of input voltage exceeds limit （540±20VAC）,under-voltage（280±20VAC）,driving module over-temperature, power open-phase ,the common contact of relay is turned to normally open contact.

7.3.7 转速反馈功能/Feedback function of rotary speed.

控制电路板上的用户接口端子FG端经外接20K电阻上拉到10V±1V后，电机运转时，此FG端输出占空比为50%方波信号，电机每旋转一周，输出5个完整周期的方波。接线图如下:

The FG terminal of the user interface terminal on the control circuit board is pulled up to 10V±1V by the external 20K resistor. When the motor is running, the FG terminal outputs a duty cycle of 50% square wave signal. Each revolution of the motor outputs 5 complete outputs of the square wave of the cycle. The wiring diagram is as follows:



FG 信号电路的外接电源，需要保证稳定性，不允许输入超过规格的电源电压，电源无明显的尖峰与浪涌冲击。外接电阻选型需要符合规格书要求。FG 端口需要注意防静电损伤。

The power supply of FG signal circuit needs to be stable，input power supply voltage is not allowed exceeding specification and surge pulse. External resistance needs to accord with specification.FG port needs to prevent electrostatic damage.

7.3.8 具有堵转保护功能/ Locked-rotor protecting function

将负载风机堵住，输入额定的电压(380VAC)及调速电压，输入电流小于规定值。

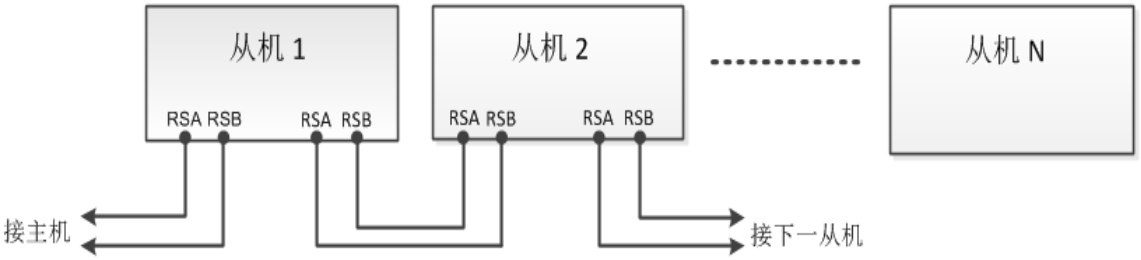
Lock the loaded fan, and input rated voltage (380VAC) and speed control voltage, and input current is less than the rated value.

7.3.9 联机模式/Online model

RS485通信功能描述/ RS485 communication function description

风机具有 RS485 通信功能，上位机可以通信方式对风机进行启停和调速，以及查询风机运行状态等。通信采用 MODBUS 协议，风机作为 MODBUS 从机，使用建议：最长通信距离≤200 米，从机台数≤20，通信线缆采用双绞屏蔽线，风机之间采用“手拉手”方式连接(如附图说明)。

The fan has RS485 communication function, and the upper computer can start and stop and speed control the fan in communication mode，and query fan operating status。The communication adopts MODBUS protocol, and the fan acts as the MODBUS slave。 Suggestions for use: the longest communication distance is ≤200 meters, the number of slave machines is ≤20, the communication cable is twisted pair shielded cable, and the fans are connected by hand in hand. Illustration



7.3.10 辅助电源输出/Auxiliary power output

输出 10±1VDC,负载电流≤5mA/Output 10±1VDC, load current≤5mA.

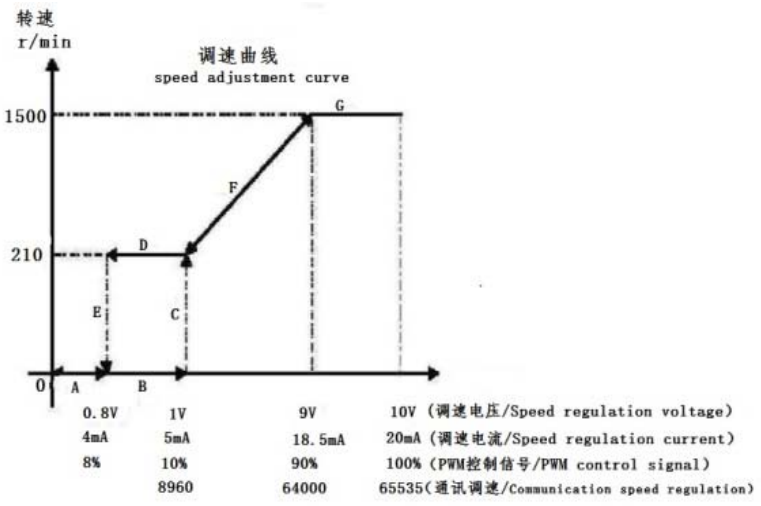
输出 20±2VDC,负载电流≤20mA/Output 20±2VDC, load current≤20mA.

7.4 速度控制/Speed control

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

最低控制电压有效值在 1.0±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 9V~10V 时,电机全速运转；输入的最大控制电压应小于 12V，以免损坏控制器。

When the RMS of the minimum control voltage is 1.0±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 9V~10V, the motor runs at full speed; the maximum control voltage input should be less than 12V to avoid damage to the controller.



7.4.2 **PWM 控制信号/** PWM control signal

PWM信号电压幅值为:10V~10.5V;频率范围为: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；当占空比有效值在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 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.

7.4.3 线性电流：4~20mA. Linear current：4~20mA.

最低控制电流有效值在 5mA±1mA 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 18.5~20mA 时,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 5mA ± 1mA, 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 18.5~20mA, the motor runs at full speed; the maximum control current input should be less than 25mA to avoid damage to the controller.

7.4.4 **RS485**通讯控制**/** RS485 control signal

当转速设定值**≥8960**时**,**风机开始运转**;**当转速设定值**≥64000**时**,**风机全速运行**.**

When the speed setting value is≥8960, the fan starts to run; when the speed setting value is≥64000, the fan runs at full speed.

7.5 接触电流/ Touch current

接触电流≤10mA（参照 GB4706.32-2012）/Touch current:≤10mA; (accord with GB4706.32-2012)

7.6 耐电压/ Withstand voltage

耐电压符合 GB/T21418《永磁无刷电动机系统通用技术条件》规定

Withstand voltage in line with GB/T21418 *General specification for permanent magnet brushless motor system*

8 包装和标识/ Packaging and marks

8.1 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 package must have a defined size and a suitable structure to ensure that the fan will not be damaged during transport.

8.2 标识/Marks:制造商名称、产品型号、重量、尺寸等

Marks: Name of manufacturer, type of fan, date of manufacture, weight,size and etc**.**

9 附件/Other requirements on accessory

9.1 连接件要求/Annectent parts

连接器/Connector(□有/Yes、■没有/No), 型号为/Model:

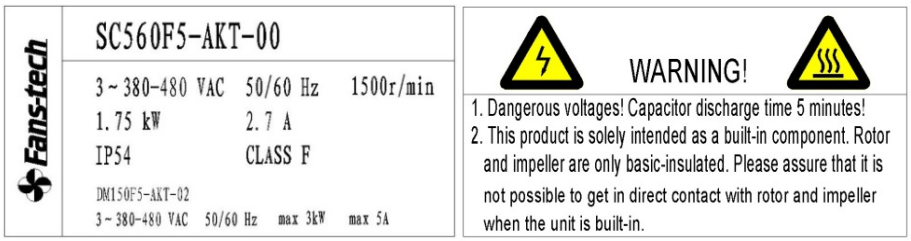
端子/Terminal(□有/Yes、■没有//No), 型号为/Model:

9.2 导风圈/Inlet cones

■带/Yes, □不带/No 型号为/Model: T01.2.560.00100(哑光黑)

10 产品标识

10.1 铭牌标识/Nameplate drawing：



警示语 /Warning:

1、 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.

2、 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.

3、 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 .

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.

5、 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.

6、 使用的安装镙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.

7、 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.

8、 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.

9、 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.

10、 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.

11、 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.

12、 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.