承　认　书

SPECIFICATION FOR APPROVAL

客　　户 CUSTOMER ：
品　　名 PART NAME：直流无刷冷却风扇
型　　号 TYPE NO　：4010 轴流风扇 FG PWM
送 样 数 量 QUANTITY:
送 样 日 期 DATE　：
样 品 单 号 SAMPLE NO:
客 户 料 号 CUSTOMER PART NUMBER ：

感谢您给予本公司送样承认的机会，烦请将此表回签本公司便于归档。谢谢！

客　户　确　认 CUSTOMER APPROVE	
承　　认 APPEOVED	日　　期 DATE
盖章 SIGNATURES	

供　　应　　商 SUPPLIER		
审　核 APPROVE	制　作 DATE	日　期 DATE
宋　博	张 杨	20180310
盖章 SIGNATURES		

正凌精密工业(广东)有限公司

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1.这份文件定义直流无刷风机电器机械特性

This documentation defines the Electrical and Mechanical characteristics of DC Brushless Fans.

2.环境条件标准（Standard Environmental Condition)

在标准温度25℃，相对湿度65%下，且允许在环境温度10-35℃，相对湿度25-80%中测试。

Temperature 25℃,relative humidity65% shall be standard if no doubt arises in the judgment.However it is permitted that test are conducted in the environment of temperature 10~35℃,relatives humidity 25~80%.

3.产品特性（Products Characters)

3-1	规格类型（Item)	规格参数值（Specification Conditions)
3-2	外形尺寸(Size of outline)	40*40*10.3MM
3-3	额定电压（RATED VOLTAGE)	DC 5.0V
3-4	电压范围 （Operating Voltage)	4.5-5.5V
3-5	启动电压（Starting Voltage)	≤3.0V
3-6	额定电流（Max.Rated Current)	≤0.12A
3-7	额定功率（Max.Input Power)	≤0.60W
3-8	额定转速（Max Rated Speed)	6500RPM±10%
3-9	风量（Air Flow)	2.10CFM
3-10	风压（Static pressure)	7.31mmH20
3-11	噪音值（Noise Value)	28.5 dba
3-12	输出信号（Output signal）	FG
3-13	极性保护功能(Polarity protection)	YES
3-14	自动启动保护功能(Auto Restart Protection)	YES
3-15	锁定保护功能(lock protection)	YES
3-16	极数(No. of Polar)	4
3-17	轴承类型（Bearing Type)	SLEEVE BEARING
3-18	预计寿命（Life Expectancy)	30000小时
3-19	连接器(Connector)	2MM裸线镀锡 4线
3-20	绝缘等级 (Insulation Class)	Class-a
3-21	运转相对温度 (Operating temperature)	-10℃to+70℃
3-22	储存相对温度(Storage temperature)	-15℃to+70℃

4.特别检验（Special inspection)

4-1	锁定保护 (Locked rotor protection)	在额定电压工作锁定 72 小时不能产生燃烧现象 Locked rotor protection:The burning cannot be produced when restricted for 72 hours at The rated voltage.
4-2	落地测试 (Drop test)	马达能在最少包装情况下，分别 3 面于 60MM 高度自由跌落在 10MM 木板上，无断裂. Motor withstands one free body drop from 60cm in height onto 10mm thickness of wooden board for each of them three faces in minimum packaging condition. NO fracture.
4-3	绝缘强度 (INSULATION STRENGTH)	在通入 500V 直流电压条件下，外框与端子线间阻抗不低于 10 兆欧姆. Under the condition of ventilation with 500 v DC voltage, Between frame and terminal impedance is Not less than 10 meg ohm.
4-4	绝缘耐压强度 (Dielectric strength)	在通入 500V/60Hz 交流电压一分钟条件下，外框与端子线之间电流不超过 5mA. In going into 500 v / 60 Hz ac voltage under the condition of one minute, between frame and terminal current is not more than 5 mA.
4-5	预计寿命(Life expectancy)	在环境稳定为 25℃，相对湿度为 15-65%RH 的条件下，预期工作时间为 30000 小时。 In a stable environment for 25 ℃, relative humidity conditions for 15-65% RH, expected work time is 30000 hours.
4-6	电源线（Lead wires)	24#铁氟龙 硬线 Black cathode（-） Red positive pole(+) YELLOW FG BLUE PWM
4-7	材质（Material)	外框：PBT 防火料 UL94V-0 outline border：PBT fireproofing UL94V-0 扇叶：PBT 防火料 UL94V-0 blower flabellum PBT fireproofing UL94V-0
4-8	尺寸规格 (Dimensions)	参照尺寸图纸 (See Dimensions Drawing)

5.特性定义（Characteristics definition):

5.1 额定电流：在温度为 25℃.相对湿度 65%的条件下，连续以额定电压运转 3 分钟后测量出来的电流值.

Rated current:Rated current shall measured after 3 minutes of continuous rotation at rated voltage in clean air at 25℃,under 65%RH.

5.2 额定转速：在温度 25℃.相对湿度 65%的条件下，连续以额定电压运转 3 分钟后测量出来的转速值。

Rated speed:Rated speed shall be measured after3 minutes of rotation at rated voltage in clean air at 25℃,under 65%RH.

5.3 启动电压：当风扇通电启动时的电压值。

Start Voltage:The voltage that is able to start the fan to operate by suddenly witching on.

5.4 噪音值：在噪音测试房中，放置麦克风于进风口一米处，并参考 ISO-7799 规格测量出来。背景噪音：20dba 最大

Noise level:In the noise test room,put the microphone in the inlet one meters,and refer

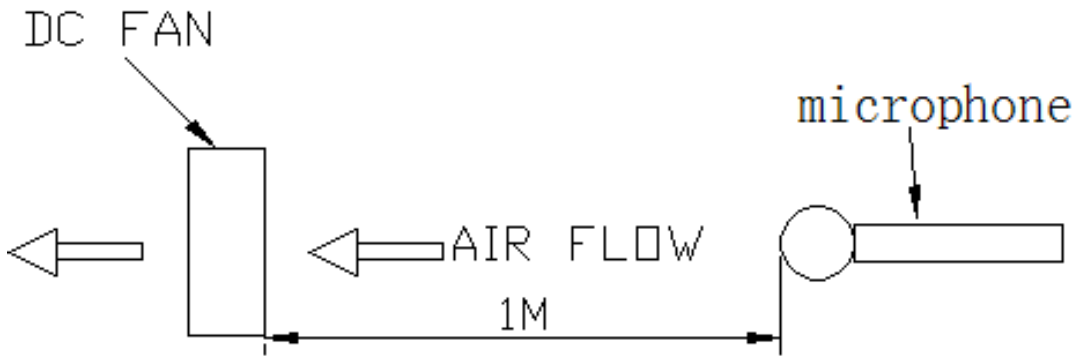
To the ISO -7799 specification is measured.background noise:20 dba is the largest.

在无声室额定电压之噪音测试

Noise is Measured At Rated Voltage In Anechoic

在空气自由流动的测试室

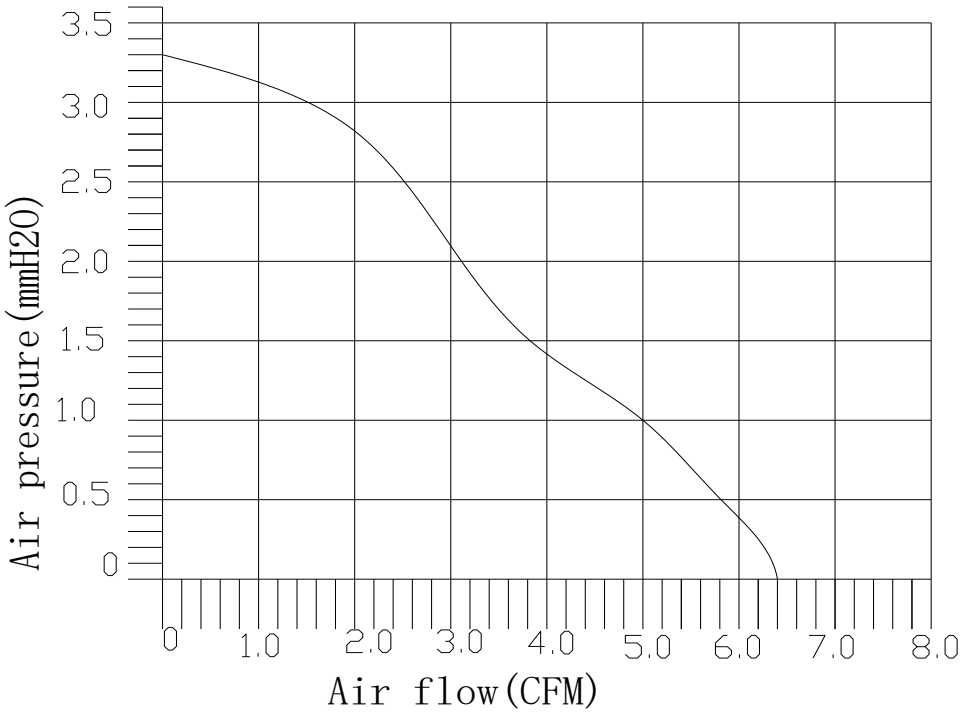
Chamber in free air As Below



6 标签 Label：

7.风量/风压曲线 Air flow/Air pressure curve

测试条件 Test Condition:
温度 Temperature:常规温度 Room temperature
湿度 Humidity:65%



8.波形特性图 Sensor feature scheme:

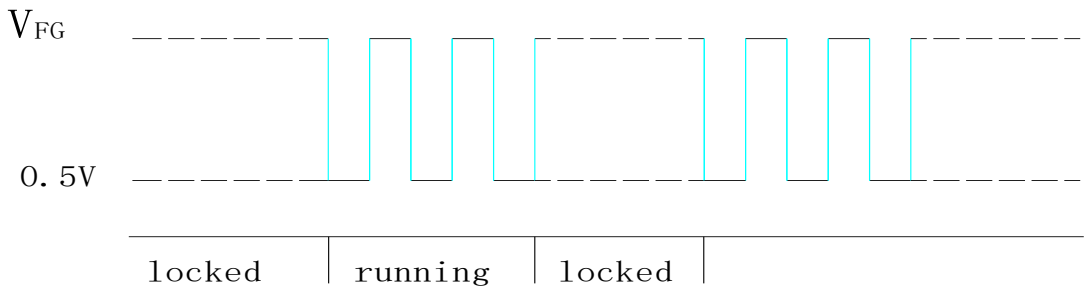
8.1 信号线将传送一系列方形波至主机板，以表示风扇工作良好。

Signal lines will sent a series of square wave to the motherboard, to indicate that the fan works well。

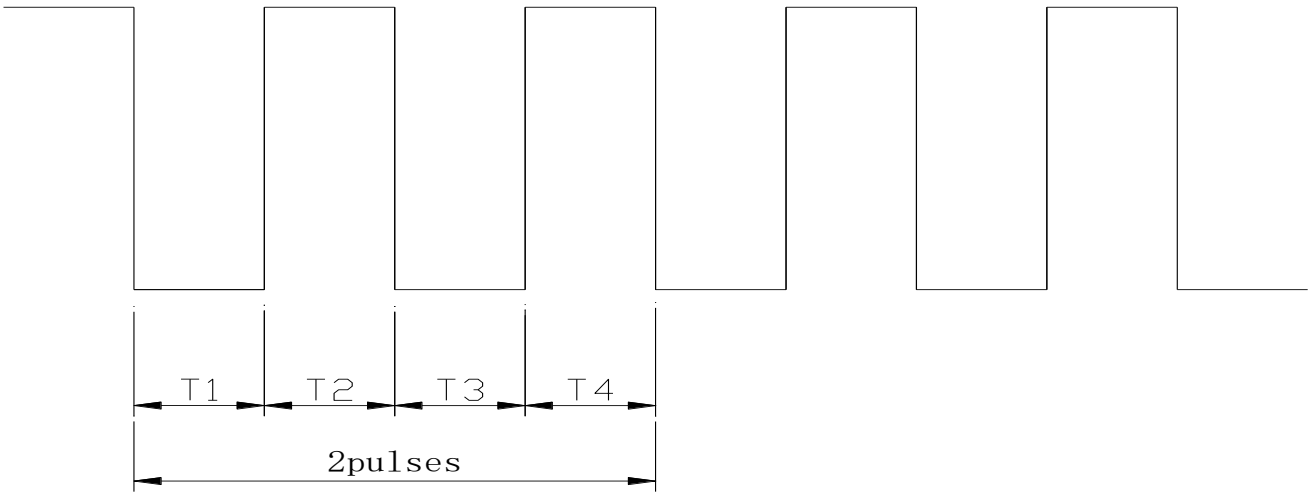
8.2 在异常情况下，风扇停止转动，则输出频率为零。

In exceptional cases, fan stop running, the output frequency is zero。

8.3 输出信号 output signal:



8.4 风扇运转为 4 极 2 周期 Fan running for 4poles 2pulese



9. PWM 信号描述 PWM signal description :

9.1 控制信号：PWM 控制（PWM control)

9.2 信号电压范围:(The range of signal voltage)

H.a：低电平: Max<0.7V (Low Level voltage:Max<0.7V)

H.b: 高电平：Min>2.5V,Max<5.5V (High Level voltage:Min>2.5V,Max<5.5V)

H.c: 脉宽调制信号频率为 10KHz-35KHz(Pulse width modulation signal frequency for 10 KHZ-35KHz)

9.3 风扇转速控制描述（Fan speed control description)

9.3.1 测试风扇的频率为 25K/Hz

Testing the frequency of the fan is 25K/HZ

9.3.2 当占空比是 20-99%时，风扇转速为 1250-6000RPM.

When the duty ratio is 20-100%, fan speed of1250-6000 RPM.

9.3.3 当占空比是 0%时，风扇停止运转。

When the duty ratio is 0%, the fan to stop running.

9.3.4 当占空比是 100%时，风扇全速运转。

When the duty ratio is 100%, the fan running at full speed.

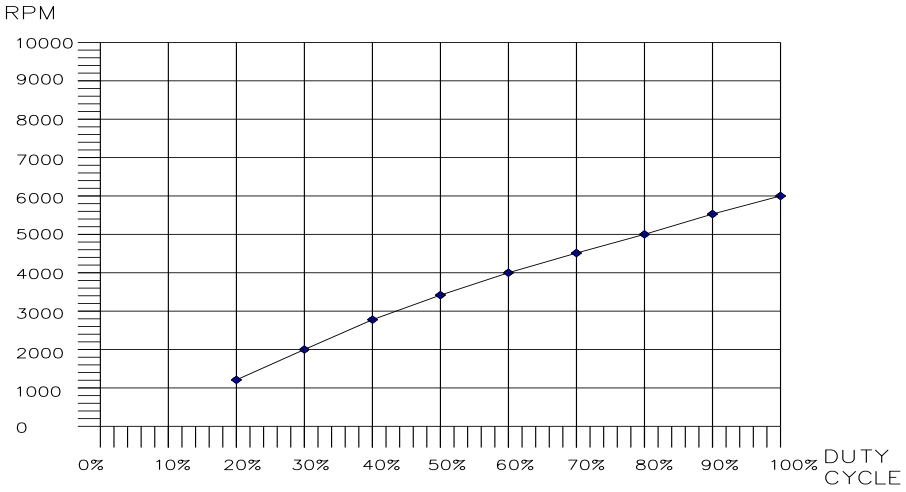
9.3.5 当 PWM 控制信号断开，风扇全速运转。

When the PWM control signal disconnect, fan running at full speed.

9.3.6 当占空比是 20%时候，风扇从停止状态开始运转。

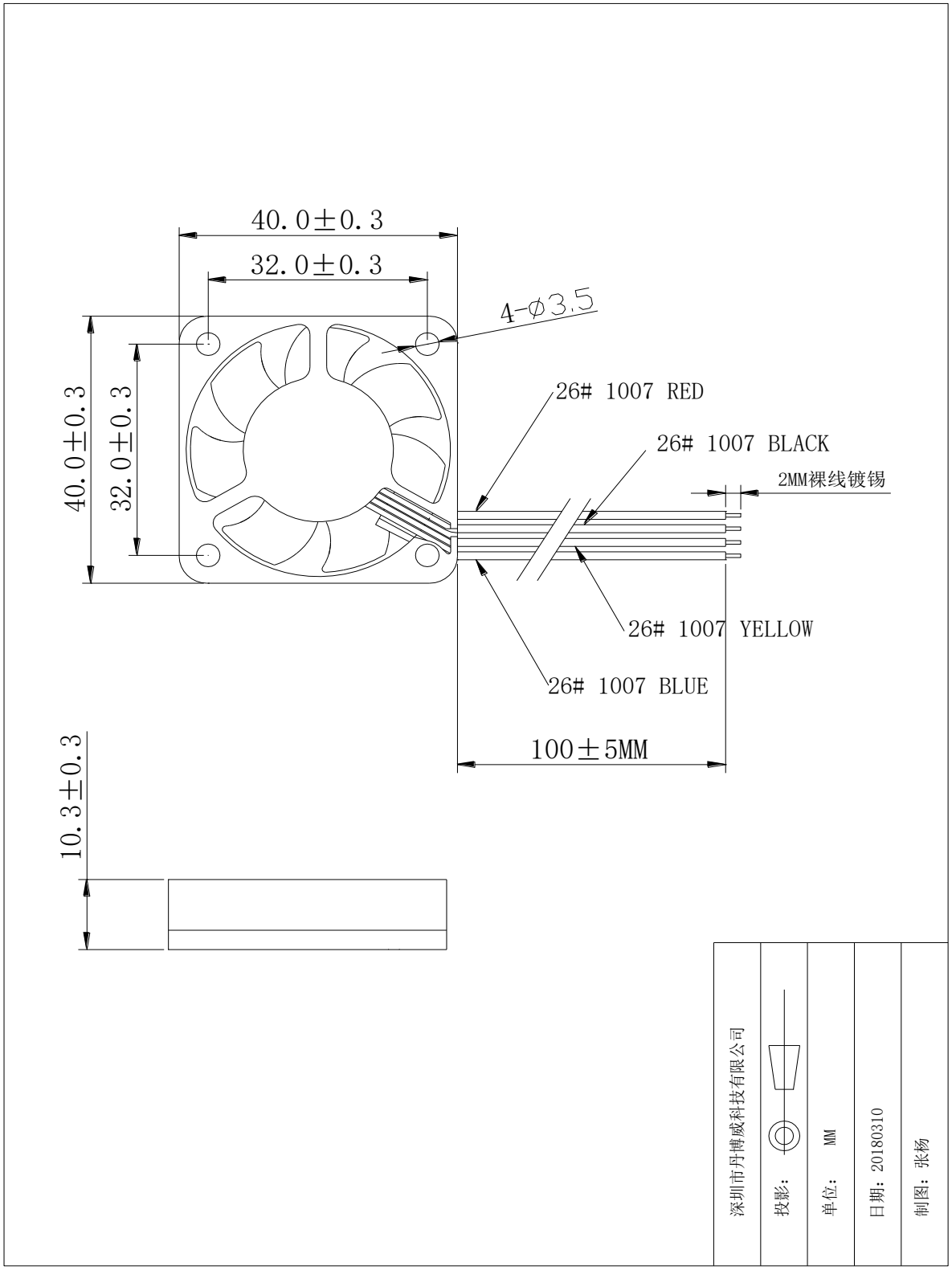
When the duty ratio is 20%, the fan from state stopped start running again.

9.3.7 占空比/转速曲线图（duty cycle/rotate speed graph）



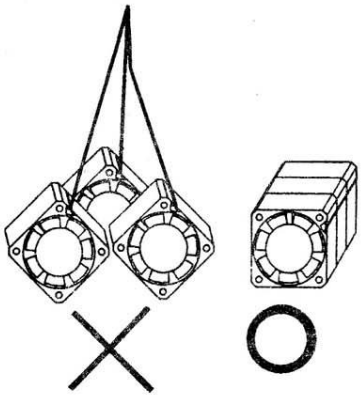
duty cycle (%)	speed RPM
100%	6000RPM
90%	5500RPM
80%	5050RPM
70%	4500RPM
60%	4000RPM
50%	3400RPM
40%	2750RPM
30%	2000RPM
20%	1250RPM
10%	0RPM

10. 外形尺寸图 （outline dimensional drawing）

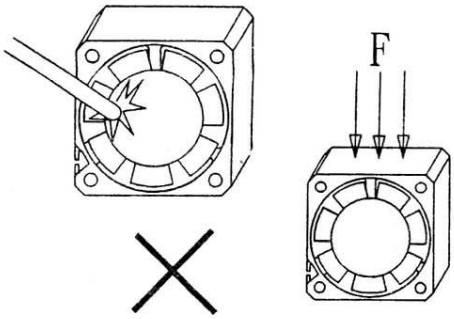

40.0±0.3
32.0±0.3
4-φ3.5
40.0±0.3
32.0±0.3
26# 1007 RED
26# 1007 BLACK
2MM裸线镀锡
26# 1007 YELLOW
26# 1007 BLUE
100±5MM
10.3±0.3
深圳市丹博威科技有限公司
投影:
单位: MM
日期: 20180310
制图: 张杨

風扇使用注意事項

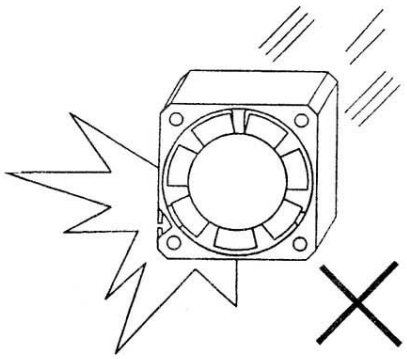
HOW TO HANDLE FAN PROPERLY?



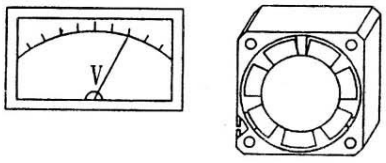
1. 取用風扇,輕取外框兩側,不可拉扯導線.
1. Hold the fan by frame side. Do not hold lead wires to support the fan.



2. 取用風扇,不可碰觸或擠壓扇葉與外框.
2. No touching or pressing on the impeller hub. Avoid crushing the frame side.



3. 風扇嚴禁掉落地面,或敲擊外框任何面.
3. Do not drop on the ground. Do not pound on the frame side.



4. 風扇電源需依照規格電壓安裝使用.
4. Connect leads priperly and applty voltage according to specification.