



SPECIFICATION FOR APPROVAL

规格承认书

To: 1906051306

产品型号 Par No. : CA12025HH48B

类别 Category: Fan Blower Centrifugal

认证 Certification: CE ROHS UL TUV

编号 Spec No.: CA12025HH48B-1906051306 版次 Version: 01

样品数 Quantity: 3 PCS 日期 Date: 2019-06-25

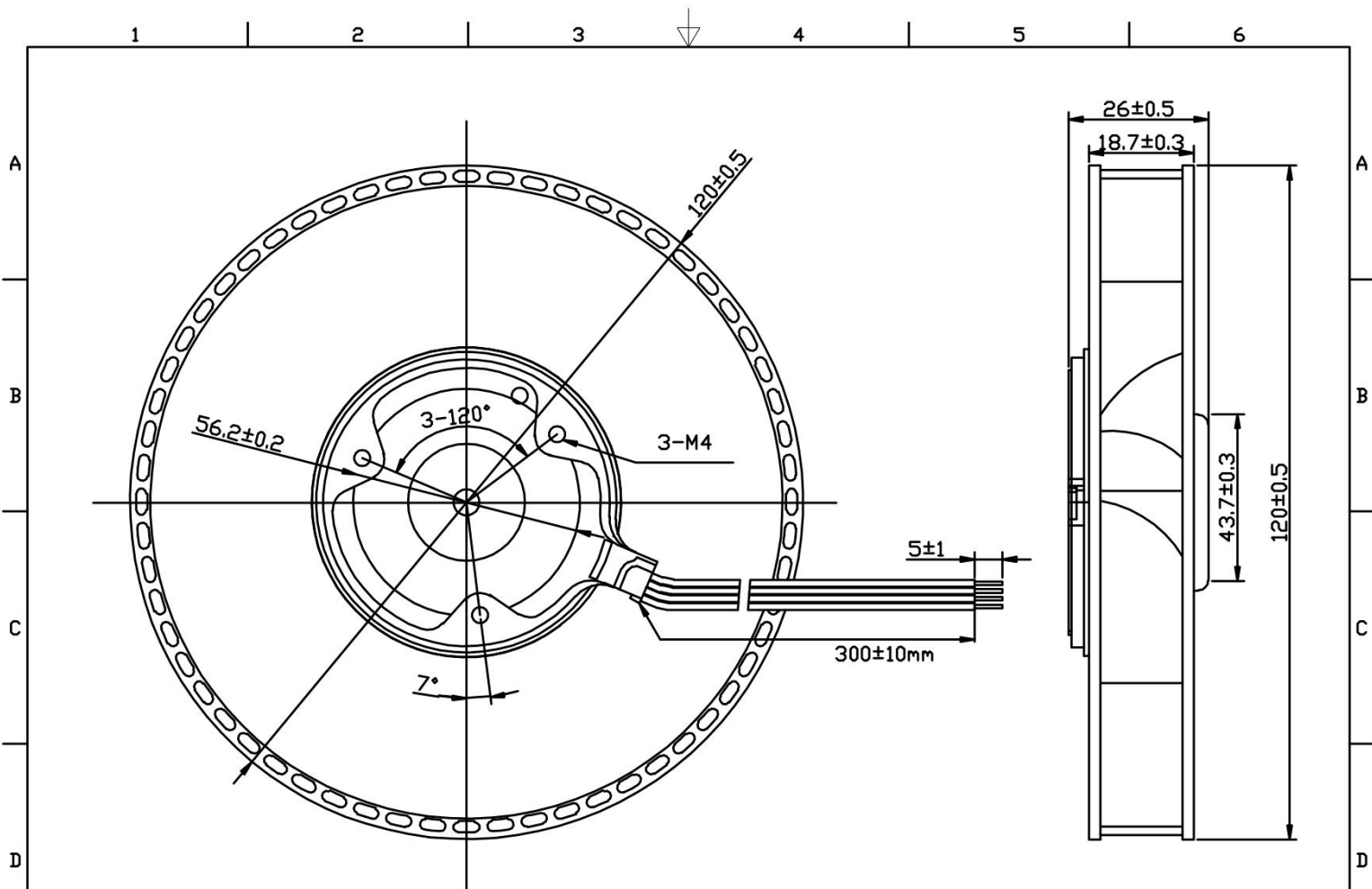
Company Stamp	CUSTOMER APPROVAL Stamp
	
制作: JQ	承认:
复核: 沈花利	核准:
核准:	日期:

电话(TEL): 86-0755-23126453 传真(FAX): 86-0755-23129135

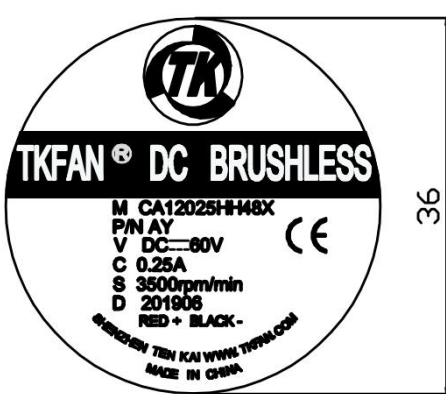
邮箱(MAIL): sales@tenkai-group.com

网址(WEB): [Http://www.tkfan.com](http://www.tkfan.com)

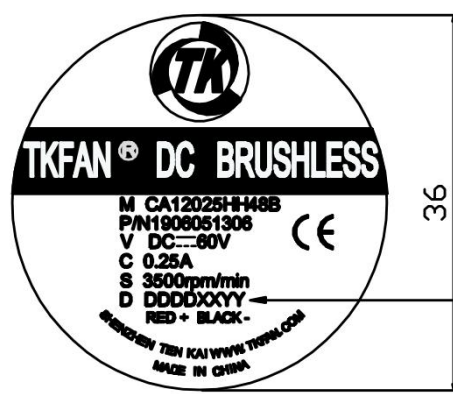
地址(ADD): 深圳市观澜街道第三工业区盈丰路 32 号



LEAD WIRE UL1007#24AWG OR EQUIVALENT
 1:RED WIRE---(+)
 2:BLACK WIRE---(-)
 3:YELLOW WIRE---(FG)
 4:BLUE WIRE---(PWM)



LABEL 1



LABEL 2

DATE
as:20190625

Mark 记号	REASON 变更原因	PROJECTION		单位 UNIT	深圳市腾凯特种机电有限公司 SHEN ZHEN TENKAI GROUP LIMITED			
				mm				
				比例 SCALE	型号 Model NO.	CA12025HH48B	图号 Drawing NO.	CA12025HH48B-1906051306
					制图 Drawing	尤瑞鹏	日期 Date	2019.06.25
					检查 Check	刘良军	日期 Date	2019.06.25
					批准 Approved		日期 Date	
					描述 Description	DC BRUSHLESS Centrifugal		
					材质 Material	页数 Page	1/1	
					表面 Finish	版次 Rev	A0	

公差 TOL	LINEAR	.X	.XX	ANGULAR
	(0,50]	±0.10	±0.05	X. ±0.5'
	(50,100]	±0.20	±0.10	X.X ±0.1'
	(100,+∞]	±0.30	±0.15	

It is prohibited to duplicate this document without explicit authorization or to hand it over to others for use.

規格參數

SPECIFICATION

Model 型号:			
Item 项目	Unit 单位	Specification 參數	Condition 條件
Dimension 尺寸	Mm 毫米	Ø120X25	LxWxThickness 长宽高
Bearing System 轴承类型	----	Two Ball Bearing	----
Rated Voltage 额定电压	VDC	60	----
Operating Voltage Range 操作电压范围	VDC	48~72	At 25°C
Start-up Voltage 启动电压	VDC	≤48	At 25°C
Rated Current 额定电流	Amp 安培	0.25(Max0.3)	At Rated 在额定电压下
Lock Rotor Current 锁定电流	Amp 安培	0.00	Locked 锁死
Rated Power 额定功耗	Watt 瓦特	15	At Rated 在额定电压下
Rated Speed 额定转速	RPM 圈/分钟	3500±10%	AT Rated Voltage 30°C
Air Flow 风量	CFM	69.69	In Free Air 无风阻条件
Static Air Pressure 静压	mmH ₂ O	21.18	When Air Flow=0
Noise Level 噪音	dBA	54.40	At Rated Speed 额定速
Polarity protection 反向保护	--	Reverse protection	Yes
Other Spec.	Tachometer Output 转速反馈		Yes
	Soft-restart function 软启动		Yes
	Lock Protection 锁定保护		Yes
	Lock Rotor Alarm 锁定报警		NO
	PWM Control 速度控制		Yes
	Thermal Control 过热保护		NO
	Over voltage protection 过压保护		NO
	Over current protection 过流保护		NO
	fixed constant speed Function 恒速功能		NO
Connection Lead Type 连接方式	Lead Wire 导线型号	300mm 1007#24AWG	See Page 2 见图纸
	Connector 端子	NO	Not Required
Life Expectancy 预期寿命	Hours 小时	50000hrs	At 25°C 在 25°C条件下
Net Weight 净重	g 克	154.5g	1PCS
备注 Note	MCU+177		

絕緣耐壓 Dielectric Strength	5Ma Max./導線与外框間測量，500VAC/min 5Ma Max./Measured between lead wire(+)and frame at 500VAC/min
極數 Number of Pole	4 極 4 Poles
EMC	Pass
運轉溫/濕度範圍 Operating temp. Range	溫度/temperature: -40℃~+80℃ 濕度/Humidity: 35%~85%RH
絕緣阻抗 Insulation Resistance	10MΩ /裸線与外框間測量，500VDC/min 10MΩ/between unshackled wire and frame at 500VDC/min
耐濕性 Humidity	電器規格依據 MIL-STD 202F Method 103B 濕度: 95%RH, 溫度: 40±2℃ According to MIL-STD 202F Method 103B Humidity: 95%RH,Temp.: 40±2℃
熱衝擊 Thermal Shock	電器規格依據 MIL-STD 202F Method 107D According to MIL-STD 202F Method 107D
絕緣階段 Insulation Shock	UL: A 種 UL: Class A
包裝耐振試驗 Packing Vibration Test	包裝后, XYZ 施 1.1KG 測試 30 分鐘無損壞 Load Vibration test for 30min,No serious damage

SHENZHEN TENKAI GROUP

MODEL NO.

CA12025HH48B

MTBF REPORT

STARTED DATE: 2009.5.16

FINISHED DATE: 2009.10.20

TEST CONDITION TEST (1) VOLTAGE: 60VDC (2) TEMPERATURE: 75°C	ITEM	SPECIFICATION	TEST SAMPLES	20					
	OPERATION VOLTAGE	60VDC±10%	TEST HRS/EA	2,200					
	CURRENT DRAIN	MAX ≤0.25 A	TOTAL TEST HRS	44,000					
	SPEED	3500RPM±10%	FAILURE Q'TY	0					
	ACOUSTICAL NOISE		CONFIDENCE LEVEL	90%					
			MTBF	53905hours					
FAILURE DEFINITION (1) CURRENT:= 10%/-30% of Original value (2) RPM: Over 30%/-15% of Original value (3) NOISE LEVEL: Over±10% of origin	ITEM	CHECK POINT AT THE HOURS							
	TEST DURATION(HRS)	250	500	1k	1.5k	2k	2.2k		
	ACCUMULATED FAILURE Q'TY	0	0	0	0	0	0		
	SURVIVAL Q'TY	20	20	20	20	20	20		
	ACCUMULATED FAILURE RATIO	0%	0%	0%	0%	0%	0%		
	FAILNO.TEST TIME(HRS) SURVIVAL Q'TY ACCUMULATED FAIL RATIO DESCRIPTION								
TEST RESULT: 1. FORMULA OF FIGURING OUT ACCELERATION FACTOR: T_u : Required Temp (25°C) T_a : Experiment Temp.(75°C) $AF = 2^{\wedge}[(T_a - T_u)] = 2^{\wedge}[(75 - 25)/10] = 32$ MTBF=[ACTUAL TEST TIME*SAMPLE Q'TY]*AF/TR/SAMPLE Q'TY MTBF=[(2200*20)*32]/1.3026/20=53905HOURS						2. CONFIDENCE LEVEL: ACCORDING TO GEM TABLE 90% ZERO FAILURE TR=1.3026			
APPROVED BY: BOPING GONG	CHECKED BY: SHU LIN XIE				TESTED BY: JUN ZHANG				

风扇特性曲线风量风压测试报告

The Report of Fan Performance P-Q Curve Test

1. 产品特性依照 AMCA-210 标准在双箱里包括风量与风压的测试。

The performance including air flow and air pressure measured in Double Chamber is measured according to AMCA210-92 standard.

测试编号(No.): 3147

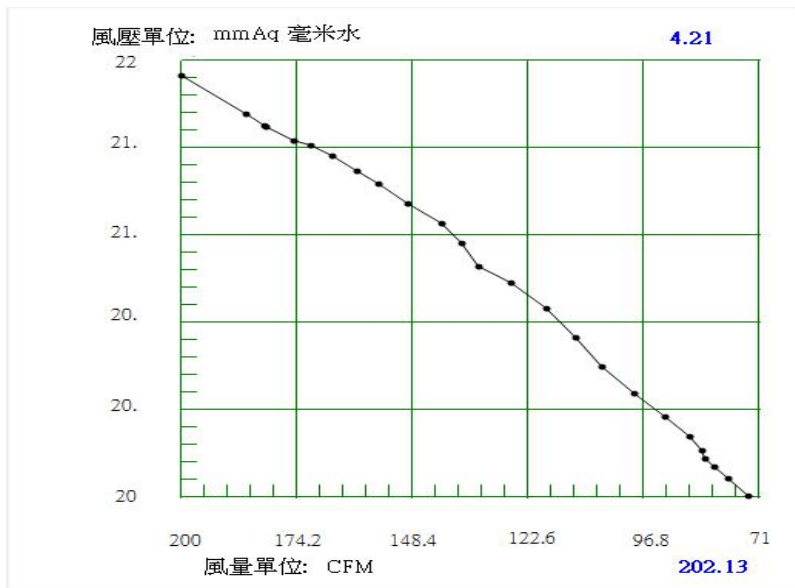
测试日期(Date) : 2019/06/25

2. 测试数据:

序号 No.	项目 Item	规格 Specification	单位 Unit
1	测试电压 Test Voltage	60	VDC
2	转速 Speed	3500	RPM
3	大气压力 Barometric Pressure	761.5	mmHg
4	相对湿度 Relative Humidity	50	%
5	最大风量(零静压时)Max.Air Flow(At Zero Static Pressure)	69.7	CFM
6	最大风压 (零风量时) Max. Air Pressure(At Zero Air Flow)	21.2	mmH ₂ O

3.P-Q 数据及曲线 P-Q Data and Curve

序号	mmAq	CFM	A	Watt	RPM
1	21.18	0	0.19	11.2	
2	18.63	10.23	0.2	12	
3	16.39	21.61	0.21	12.4	
4	13.75	31.95	0.19	11.4	
5	10.74	40.49	0.2	12.1	
6	6.53	51.6	0.2	12	
7	2.99	62.45	0.21	12.4	
8	0	69.69	0.21	12.3	



风扇特性曲线 PWM 测试报告

The Report of Fan Performance PWM Curve Test

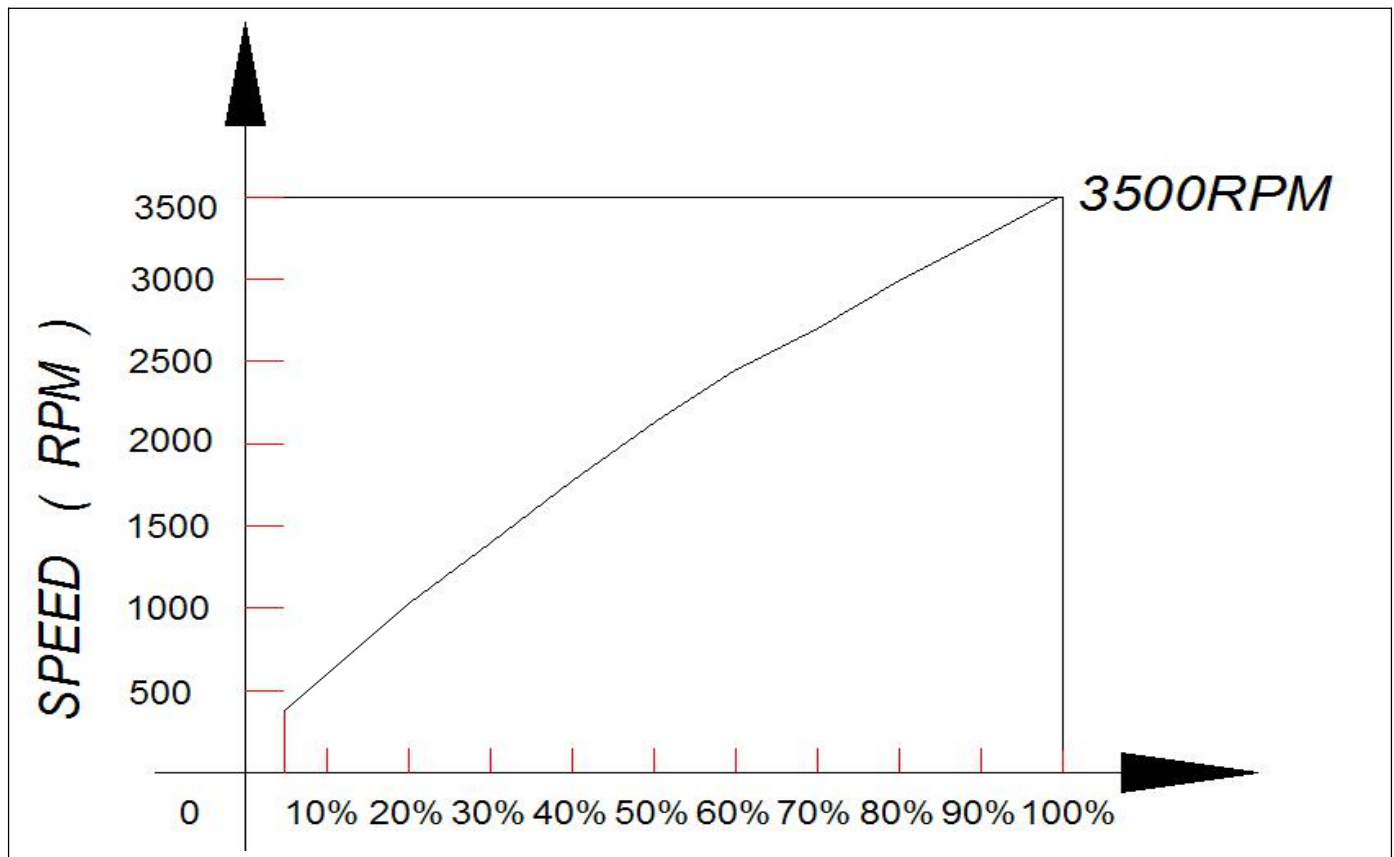
测试编号(No.):371

测试日期(Date) : 2019-06-25

1.测试数据:

序号	百分比	转速	单位 Unit
1	5%	390	RPM
2	10%	600	RPM
3	20%	1020	RPM
4	30%	1400	RPM
5	40%	1780	RPM
6	50%	2120	RPM
7	60%	2450	RPM
8	70%	2700	RPM
9	80%	3000	RPM
10	90%	3250	RPM
11	100%	3500	RPM

2.PWM 数据及曲线 PWM Data and Curve



噪音测试报告

The Report of Acoustic Noise Test

报告编号 Report No.TN1511309

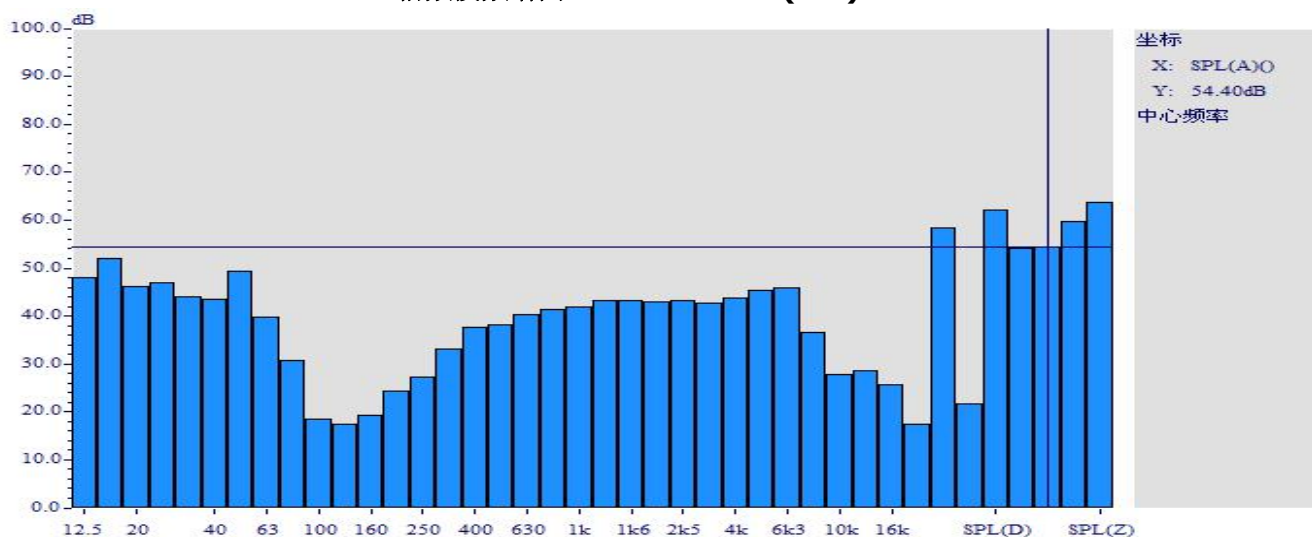
样品名称 Sample Name	Brushless Fan / Blower
测试条件 Test Condition	测试方法 Test Method
1.温度 Temperature: 31 °C 2.湿度 Humidity: 75 %RH	1.测试位置 Test Position : 180° 2.测试距离 Test Distance:1.0M From the fan intake 3.背景噪音 Background Noise: 19.1dB(A) 4.测试依照标准 ISO3745 执行 This test executes according to ISO3745 standard

测试设备 Test Equipment:

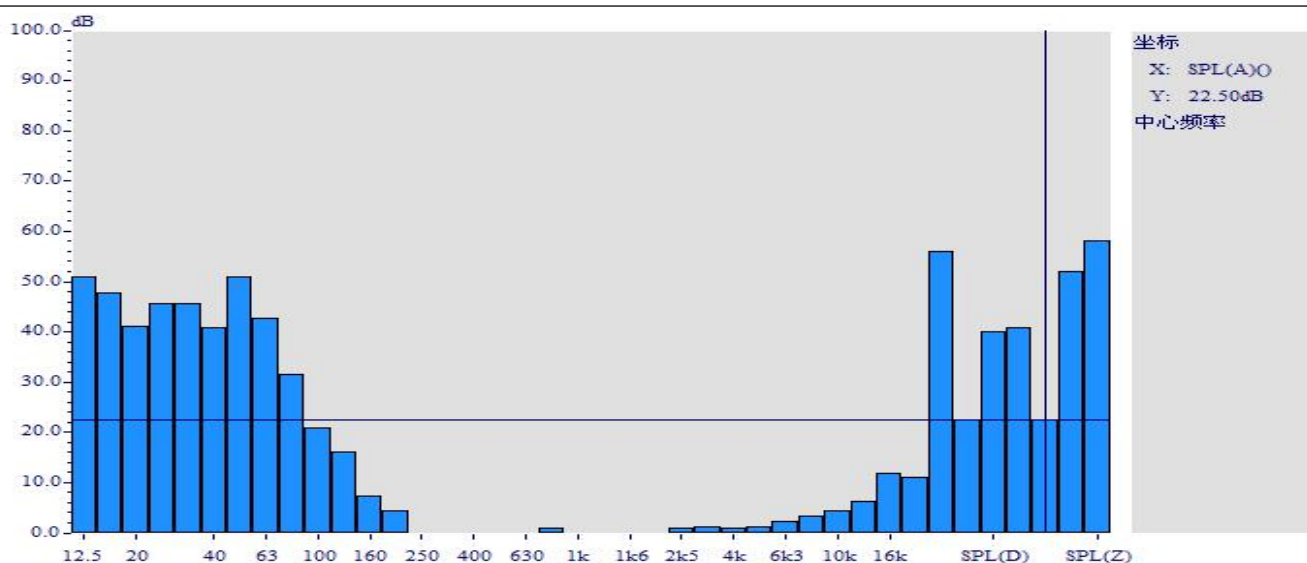
声望 VA-Lab2 二通道噪声频谱分析仪 BSWA VA-Lab2 double channels noise Spectrum Analyzer

测试结果 Test Result: Leq:54.40dB(A); 测试距离 Test distance: 1 meter

倍频段频谱图 Octave-Band(1m)



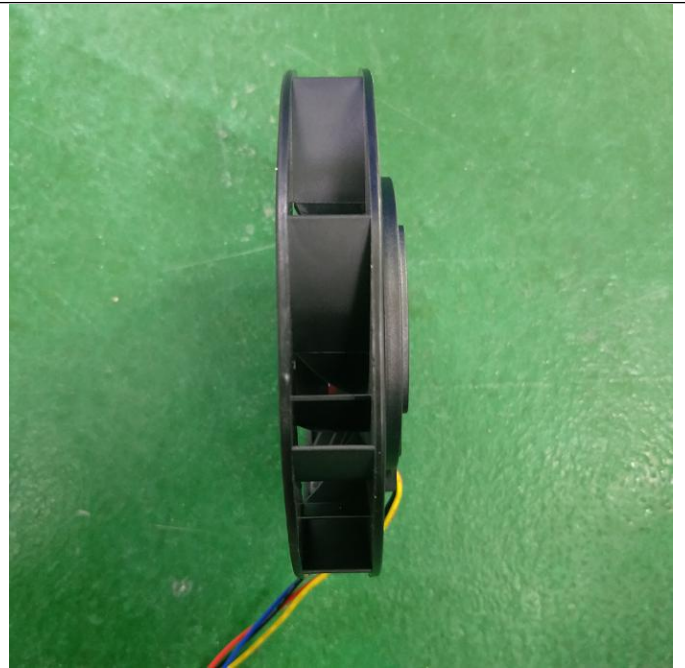
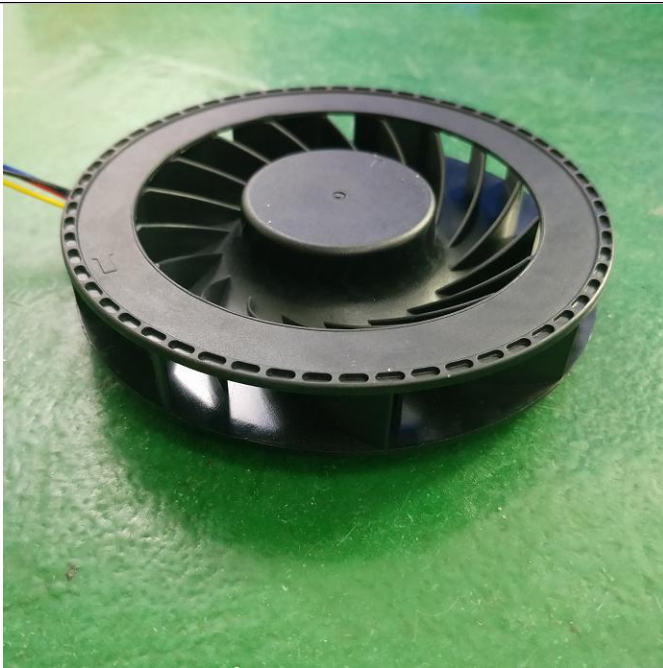
测试结果 Test Result: Leq:22.50dB(A); 背景噪音 Background Noise



※本报告未经许可严禁擅自更改其中内容 Do not change the content of this report without written permission of authority;
 ※一般情况, 委托检验结果仅对所检验样品有效 Generally, commission test is responsible for the tested samples only;
 ※报告无主检、审核人签字无效 The test report is invalid without the signatures of Author and Reviewer.

实物图

The pictures

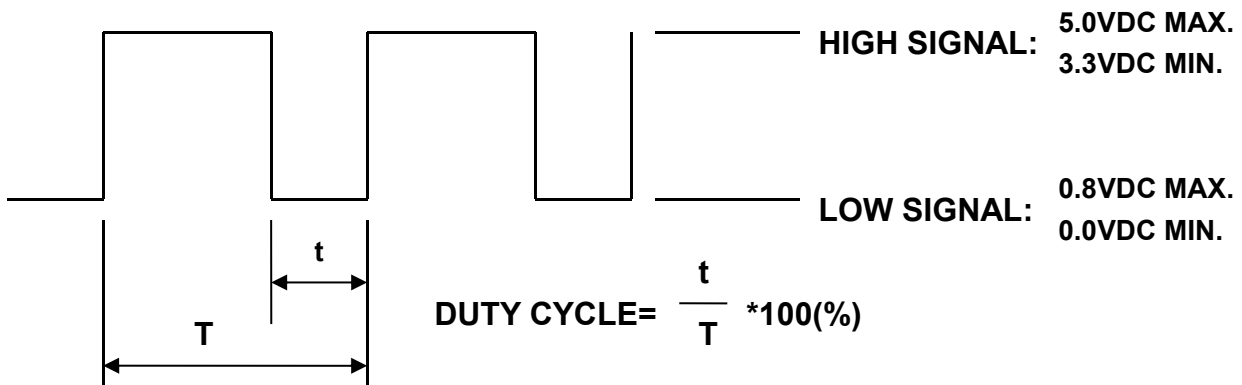


功能描述

Functional description

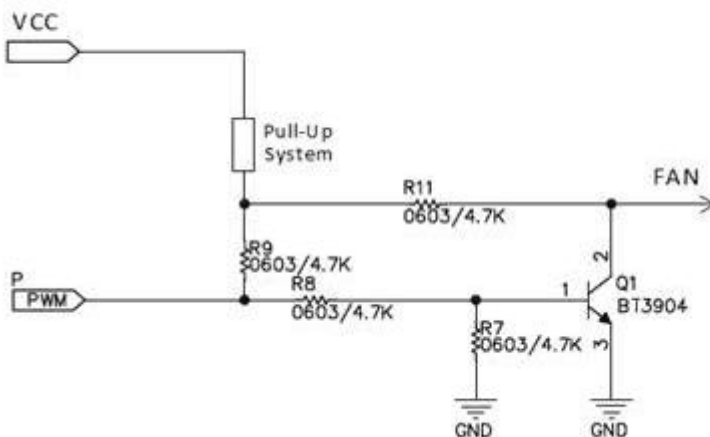
一. PWM CONTROL SIGNAL PWM 控制信号:

SIGNAL VOLTAGE RANGE 控制电压输入范围:-0.5~+5.0VDC



- THE FREQUENCY FOR CONTROL SIGNAL OF THE FAN SHALL BE ABLE TO ACCEPT 16K~32 KHZ.
- THE PREFERRED OPERATING POINT FOR THE FAN IS 25K HZ.
- AT 100% DUTY CYCLE,THE ROTOR WILL SPIN AT MAXIMUM SPEED.
- AT 0% DUTY CYCLE,THE ROTOR WILL STOP.
- WHEN CONTROL SIGNAL LEAD DISCONNECTED,THE FAN WILL MAXIMUM SPEED.
- AT 25K 3%~5% DUTY CYCLE,THE FAN WILL BE ABLE TO START FROM A DEAD STOP.
- THE FAN SPEED CONTROL IS CLOSED-LOOP.

二.PWM CONTROL LEAD WIRE INPUT IMPEDANCE:



1. THE FAN SPEED WILL DEFAULT TO MAXIMUM WHEN THE SPEED CONTROL INPUT IS LEFT UNCON
2. ABSOLUTELY NO INTERNAL PULL-UP.NECTED.

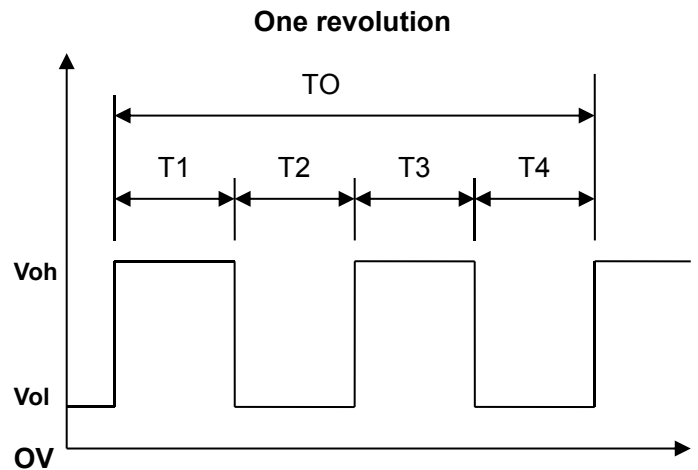
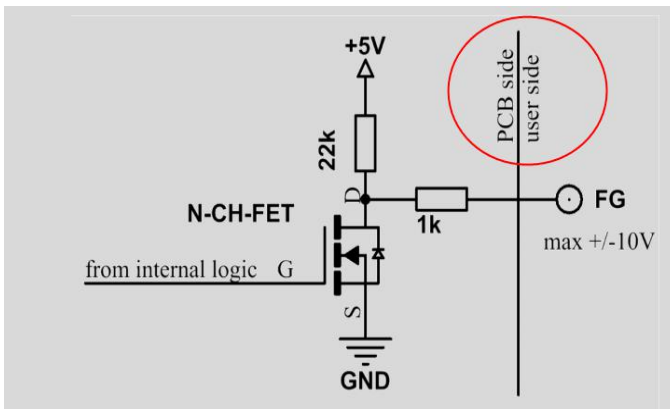
转速反馈和报警信号反馈介绍

FG and RD Function Introduction

FG (Tach output type) Connection Diagram 转速反馈连接介绍

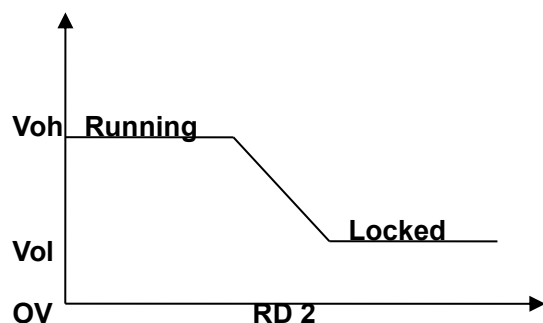
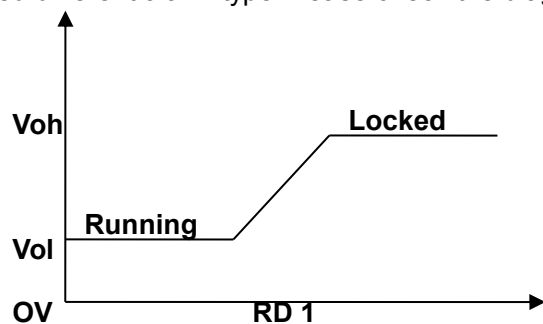
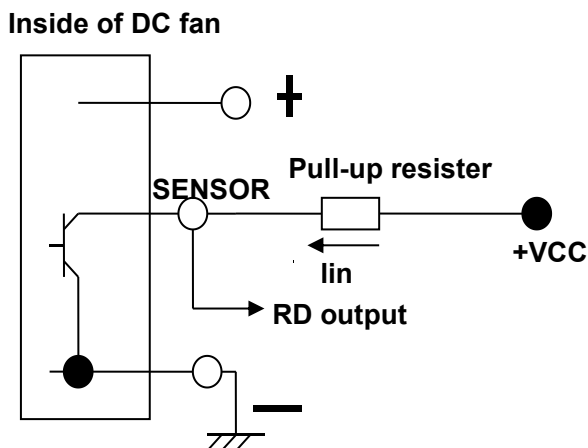
Fan with FG function will create a square wave output. You can know fan speed by sensing the output wave Frequency. Most dc fan have four pole. So when fan run for one round, there will be two high level pulse. About other Multipole brushless fan, high level pulse will be different.

But please notice if you want to sense it's output wave, there is a external circuit. Please check the circuit Diagram below. There is no pull-up and VCC value limit. But please notice the Max I_{in} have to be small than 20mA.



RD (Alarm output) connection Diagram 报警输出连接方式介绍

Some fan have RD extra function. There is a alarm signal output when fan stop work. Please notice there are Two kinds of signal output. Different customer will need different alarm type. Please check the diagram below.



公司简介 COMPANY INTRODUCTION



公司前台
(Company reception desk)



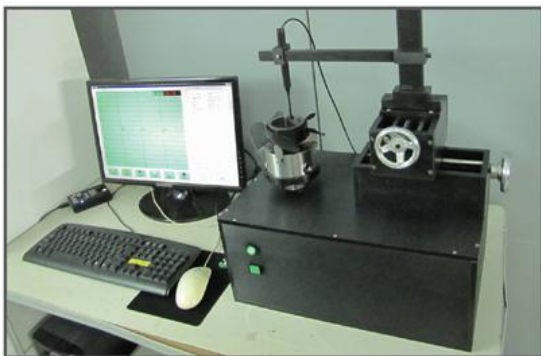
会议室
(Council-chamber)



风动测试仪 (CFM test system)
Can get the CFM data, mmH₂O data,
working Curve autoly.



盐雾测试仪 (Salt mist testing system)
Test the salt mist performance of
Waterproof fan with level IP55 and IP68



高斯计
(Gaussmeter)



回流焊机
(Reflow soldering machine)



1.无刷风机 (Brushless FAN)

直流风机尺寸 (DC FAN size available) (单位/UNIT:mm)

10mm	15x15x4	17x17x8	18x18x4		
20mm	20x20x6	20x20x10	25x25x7	25x25x10	
30mm	30x30x7	30x30x10	35x35x10		
40mm	40x40x7	40x40x10	40x40x20	40x40x28	
50mm	50x50x10	50x50x15	50x50x20		
60mm	60x60x10	60x60x15	60x60x20	60x60x25	60x60x38
70mm	70x70x10	70x70x15	70x70x25		
80mm	80x80x10	80x80x15	80x80x20	80x80x25	80x80x38
90mm	92x92x25	92x92x32	90x92x38		
120mm	120x120x15	120x120x25	120x120x32	120x120x38	
130mm	130x130x50				
140mm	140x140x25	140x140x38	140x140x56		
150mm	150x150x38	150x150x50			
170mm	∅172x25	172x152x25	∅171x50	172x152x51	
200mm	200x200x60	∅254x89	255x255x80		

交流风机尺寸 (AC FAN size available) (单位/UNIT:mm)

60mm	60x60x30				
80mm	80x80x25	80x80x38			
90mm	92x92x25	90x90x38			
110mm	110x110x25				
120mm	120x120x25	120x120x38			
130mm	135x135x38				
150mm	150x150x51				
170mm	172x150x38	172x150x51	∅172x51		
180mm	180x180x60				
200mm	200x200x60	∅200x60	225x225x80	∅254x89	

防水风机尺寸 (Waterproof fan size available) (单位/UNIT:mm)

Available PVD IP68 fan size:20x20x6mm-arbitrary size

Available plastic cover IP68 fan size:

40mm	40x40x20	40x40x28			
50mm	50x50x15	50x50x20			
60mm	60x60x15	60x60x20	60x60x25	60x60x38	
70mm	70x70x15	70x70x20	70x70x25		
80mm	80x80x15	80x80x20	80x80x25	80x80x38	
90mm	92x92x25	92x92x38			
120mm	120x120x25	120x120x38			
150mm	150x150x50				
170mm	172x150x51				
180mm	180x180x60				
200mm	∅254x89				

2.鼓风机 (Blower FAN)



直流鼓风机尺寸 (DC Blower size available) (单位/UNIT:mm)

10mm	18x18x4				
20mm	20x20x8	22x21x18	22x22x35		
30mm	30x30x4	30x30x10			
40mm	40x40x10	40x40x20			
50mm	50x50x10	50x50x15	50x50x20	50x50x25	
60mm	60x60x15	60x60x25			
70mm	70x70x15	75x7x25	75x75x30	76x76x27	
90mm	97x97x33				
120mm	120x120x32	140x140x40			

交流鼓风机尺寸 (AC Blower size available) (单位/UNIT:mm)

90mm	97x97x33				
120mm	120x120x32				

防水鼓风机尺寸 (Waterproof Blower size available) (单位/UNIT:mm)

Available PVD IP68 fan size:40x40x20mm-arbitrary size

Available plastic cover IP68 fan size:

40mm	40x40x20				
50mm	50x50x15	50x50x20	50x50x25		
60mm	60x60x15	60x60x25			
70mm	70x70x15	75x75x25	75x75x30	76x76x27	
90mm	97x97x33				
120mm	120x120x32				

3.离心风机 (Centrifugal fan)



直流离心机尺寸 (DC centrifugal fan size available) (单位/UNIT:mm)

100mm	Ø100x25	Ø133x41	Ø175x42	Ø190x46	
200mm	Ø220x44	Ø225x93	Ø250x47		
300mm	Ø310x100	Ø355x97			
400mm	Ø400x90				

交流离心机尺寸 (AC centrifugal fan size available) (单位/UNIT:mm)

100mm	Ø133x42	Ø175x42	Ø190x45		
200mm	Ø220x44	Ø225x93	Ø250x47	Ø280x80	
300mm	Ø310x100	Ø355x97			
400mm	Ø400x90				

4. 风扇配件 (Fan guard)



防尘网罩的尺寸 (Fan dust cover size available)

40mm	50mm	60mm	70mm		
80mm	92mm	110mm	120mm		
135mm	150mm	172mm	200mm		



金属网罩的尺寸 (Metal fan net size available)

40mm	50mm	60mm	70mm		
80mm	90mm	120mm	150mm		
172mm	254mm				

5. Waterproof fan products

