



SPECIFICATION FOR APPROVAL

规格承认书

To: 170516926

产品型号 Par No. : CA22171HV48B

类别 Category: Fan Blower Centrifugal

认证 Certification: CE ROHS UL TUV

编号 Spec No: CA22171HV48B-A250121 版次 Version: 01

样品数 Quantity: 10 PCS 日期 Date: 2025-03-05

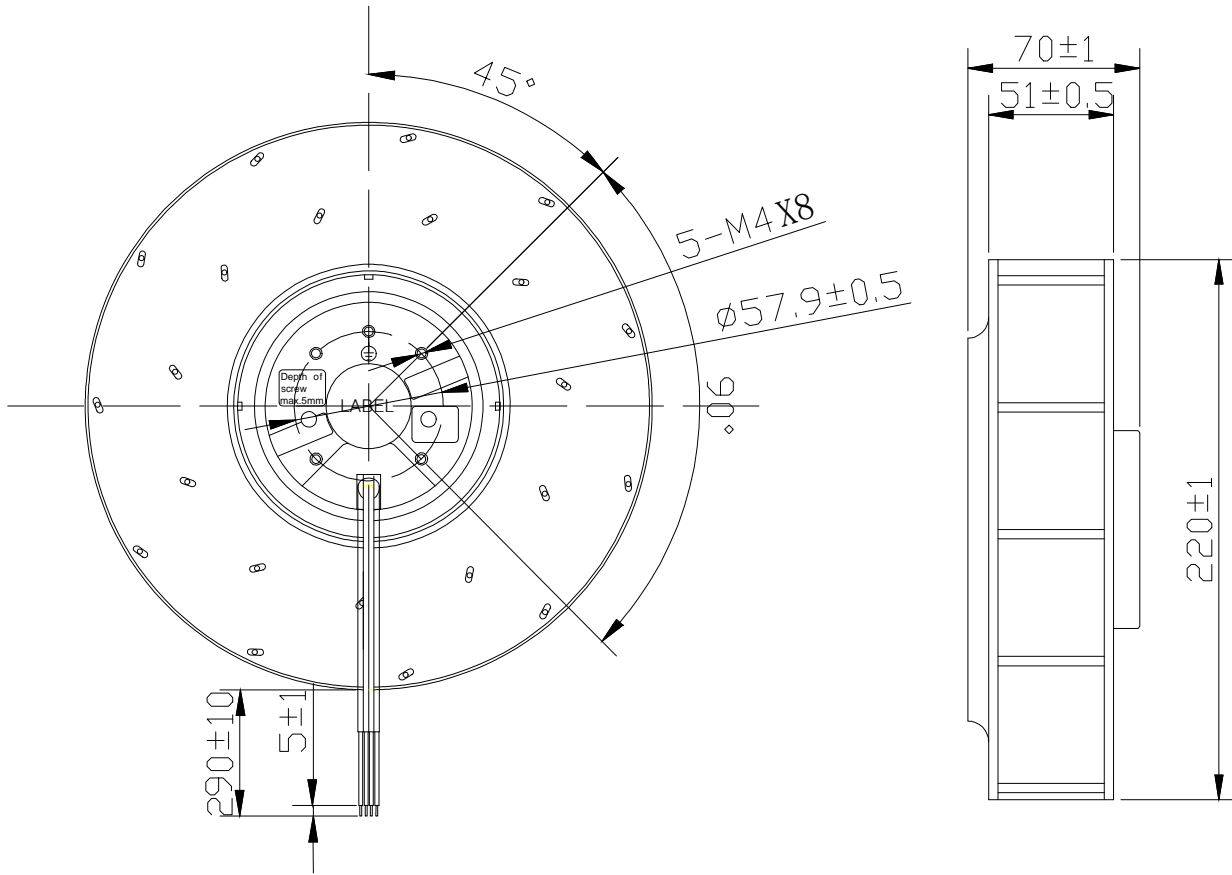
Company Stamp	CUSTOMER APPROVAL Stamp
	
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UNIT: $\frac{\text{mm}}{\text{(INCH)}}$

LEAD WIRE

UL1007#20AWG OR EQUIVALENT

- 1: RED WIRE---(+)
- 2: BLACK WIRE---(-)
- 3: YELLOW WIRE---(FG)
- 4: BLUE WIRE---(PWM)



23mm

Mark 记号	REASON 变更原因	PROJECTION 	单位 UNIT mm		深圳市腾凯特种机电有限公司 SHEN ZHEN TENKAI GROUP LIMITED								
			比例 SCALE 1:1		型号 Model NO.	CA22171HV48B	图号 Drawing NO. CA22171HV48B-A250121						
			公差 TOL	LINEAR (0,50] ±0.10 ±0.05 (50,100] ±0.20 ±0.10 (100,+∞) ±0.30 ±0.15	XX	ANGULAR X. ±0.5° X.X ±0.1°	制图 Drawing	张友桥	日期 Date	2025.03.05	描述 Description DC BRUSHLESS CENTRIFUGAL		
			It is prohibited to duplicate this document without explicit authorization or to hand it over to others for use.				检查 Check	张宇濠	日期 Date	2025.03.05	材质 Material	页数 Page	1/1
							批准 Approved		日期 Date		表面 Finish	版次 Rev	A0

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	Ø221X71	LxWxThickness 长宽高
Bearing System 轴承类型	----	Two Ball Bearing	----
Rated Voltage 额定电压	VDC	48	----
Operating Voltage Range 操作电压范围	VDC	36~52	At 25°C
Start-up Voltage 启动电压	VDC	≤36	At 25°C
Rated Current 额定电流	Amp 安培	2.9	At Rated 在额定电压下
Lock Rotor Current 锁定电流	Amp 安培	0	Locked 锁死
Rated Power 额定功耗	Watt 瓦特	139.2	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	615.3	In Free Air 无风阻条件
Static Air Pressure 静压	mmH ₂ O	80.4	When Air Flow=0
Noise Level 噪音	dBA	82.5	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	290mm1007#20AWG	See Page 2 见图纸
	Connector 端子	No	
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	1590g	1PCS
备注 Note			

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	9槽 6極 9Slots and 6Poles
EMC	
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

MTBF REPORT

STARTED DATE: 2020.5.16

FINISHED DATE: 2020.10.20

TEST CONDITION	ITEM	SPECIFICATION	TEST SAMPLES	
(1) VOLTAGE:48VDC (2) TEMPERATURE: 75℃				20
	OPERATION VOLTAGE	48VDC±10%	TEST HRS/EA	2,200
	CURRENT DRAIN	MAX ≤2.9A	TOTAL TEST HRS	44,000
	SPEED	3500RPM±10%	FAILURE Q'TY	0
	ACOUSTICAL NOISE		CONFIDENCE LEVEL	90%
			MTBF	53905hours

FAILURE DEFINITION	ITEM	CHECK POINT AT THE HOURS								
(1) CURRENT:= 10%/-30%of Original value	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%			
(2) RPM: 30%/-15%of Original value	FAILNO.TEST TIME(HRS)SURVIVAL Q'TY									
	ACCUMULATED FAIL RATIO DESCRIPTION									
(3) NOISE Over±10% of LEVEL: origin	TEST RESULT:							2. CONFIDENCE LEVEL:		
	1. FORMULA OF FIGURING OUT ACCELERATION FACTOR: Tu: Required Temp (25℃) Ta: Experiment Temp.(75℃) $AF = 2 \wedge [(Ta-Tu)]$ $= 2 \wedge [(75-25)/10]$ $= 32$ MTBF=[ACTUAL TEST TIME*SAMPLE Q'TY]*AF/TR/SAMPLE Q'TY MTBF=[(2200*20)*32]/1.3026/20=53905HOURS							ACCORDING TO GEM TABLE90% 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.): 6750

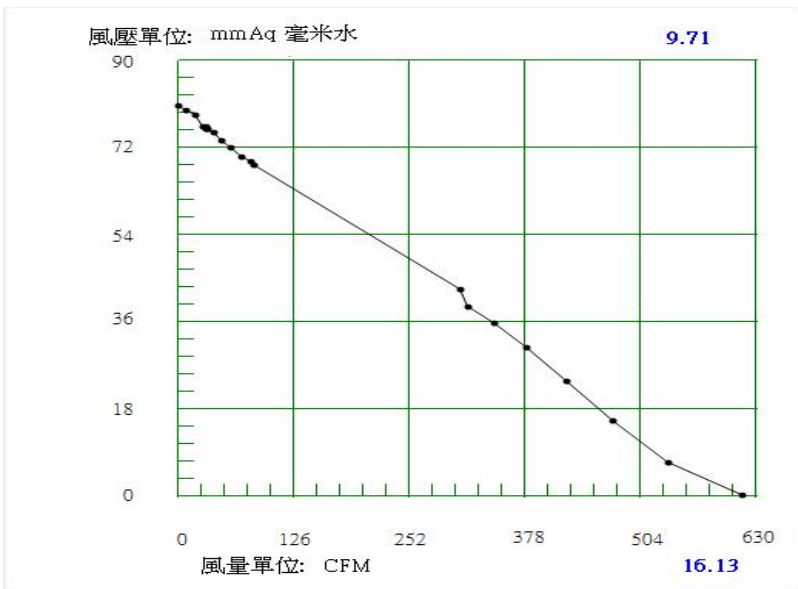
测试日期(Date) : 2025/03/05

2.测试数据:

序号 No.	项目 Item	规格 Specification	单位 Unit
1	测试电压 Test Voltage	48	VDC
2	转速 Speed	3500	RPM
3	大气压力 Barometric Pressure	761.5	mmHg
4	相对湿度 Relative Humidity	42	%
5	最大风量(零静压时)Max.Air Flow(At Zero Static Pressure)	615.3	CFM
6	最大风压 (零风量时) Max. Air Pressure(At Zero Air Flow)	80.4	mmH ₂ O

3.P-Q 数据及曲线 P-Q Data and Curve

序号	mmAq	CFM	A	Watt	RPM
1	80.37	0			
2	42.47	307.51			
3	38.99	315.74			
4	35.46	343.68			
5	30.39	380.17			
6	15.35	473.57			
7	6.65	534.04			
8	0	615.30			



风扇特性曲线 PWM 测试报告

The Report of Fan Performance PWM Curve Test

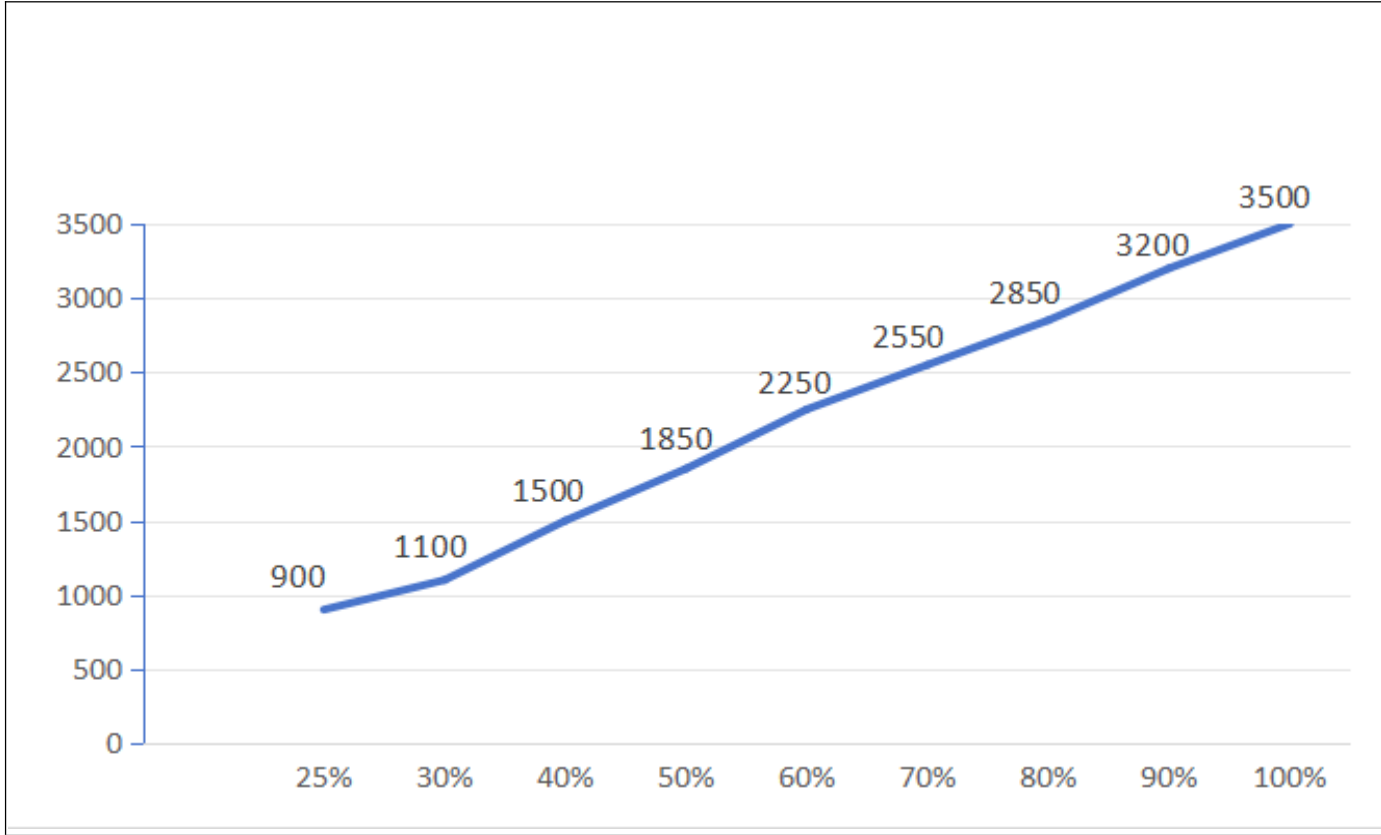
测试编号(No.):

测试日期(Date) : 2023-08-26

1.测试数据:

序号	百分比	转速	单位 Unit
1	25 (启动)	900	RPM
2	30 %	1100	RPM
3	40 %	1500	RPM
4	50 %	1850	RPM
5	60 %	2250	RPM
6	70 %	2550	RPM
7	80 %	2850	RPM
8	90 %	3200	RPM
9	100 %	3500	RPM

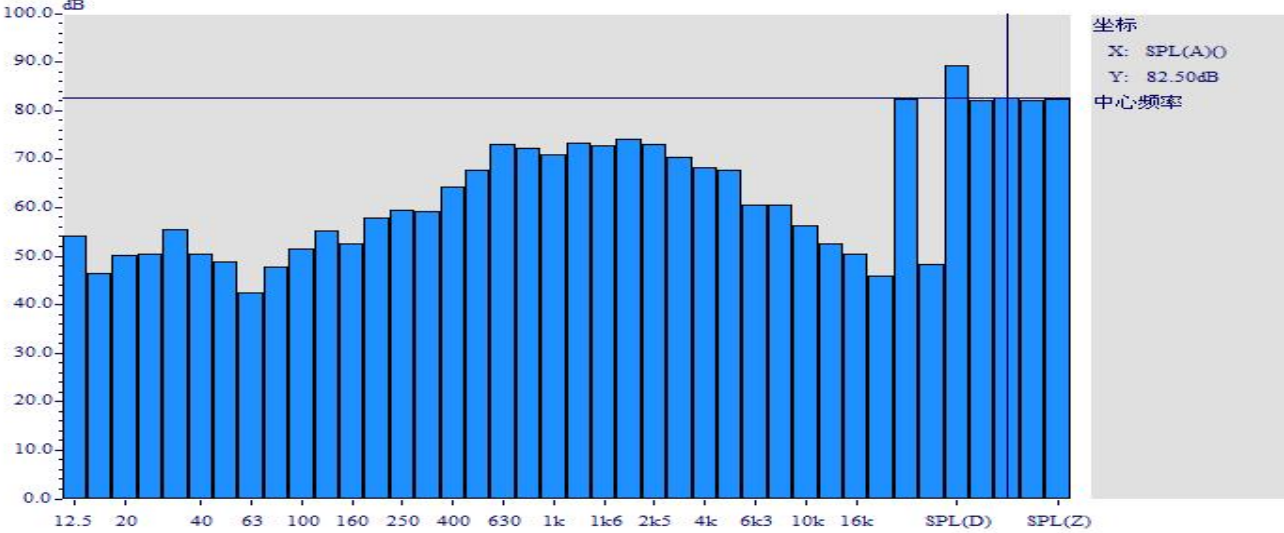
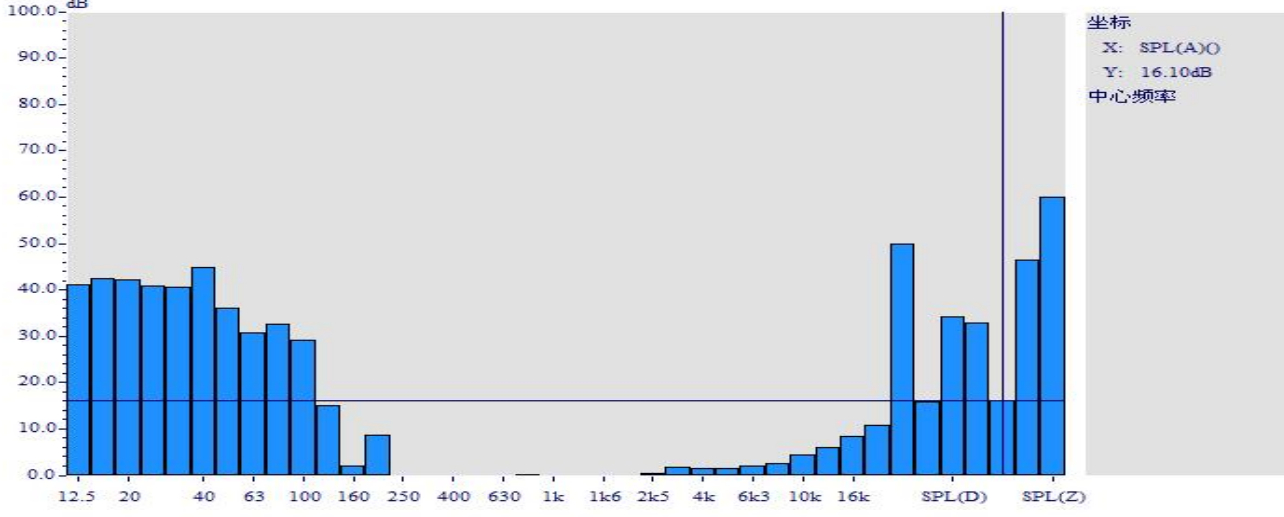
3.PWM 数据及曲线 PWM Data and Curve



噪音测试报告

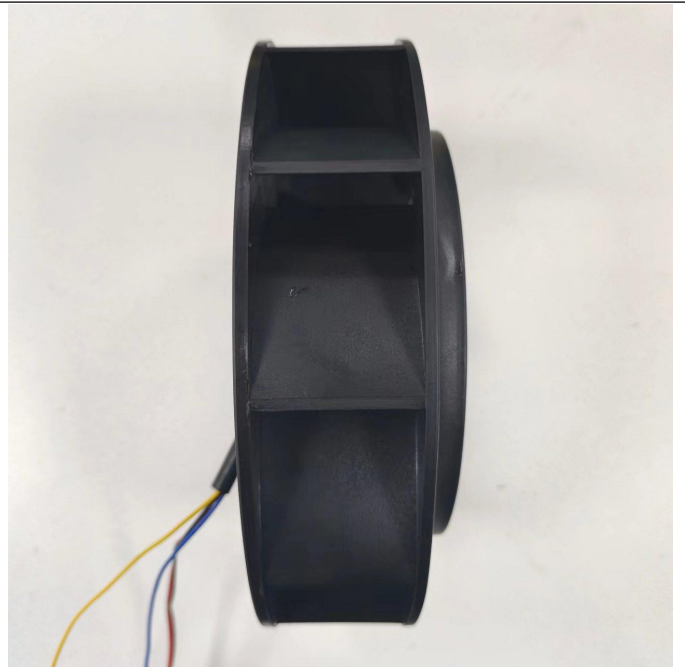
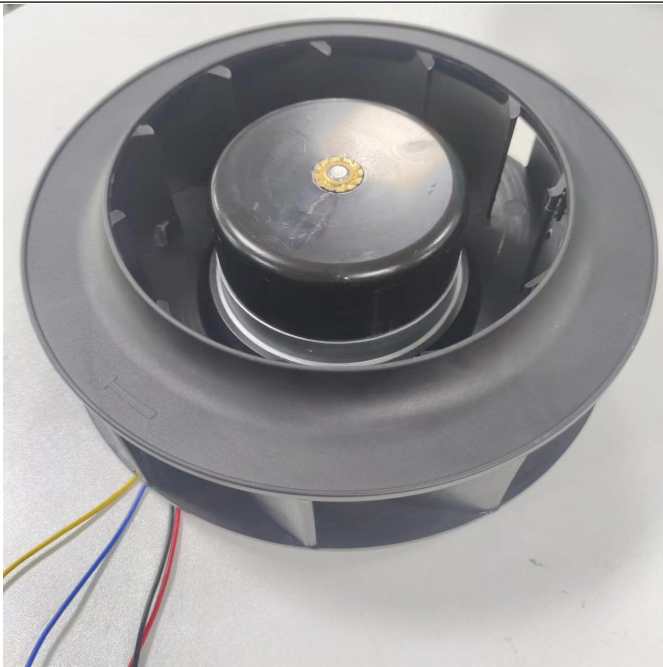
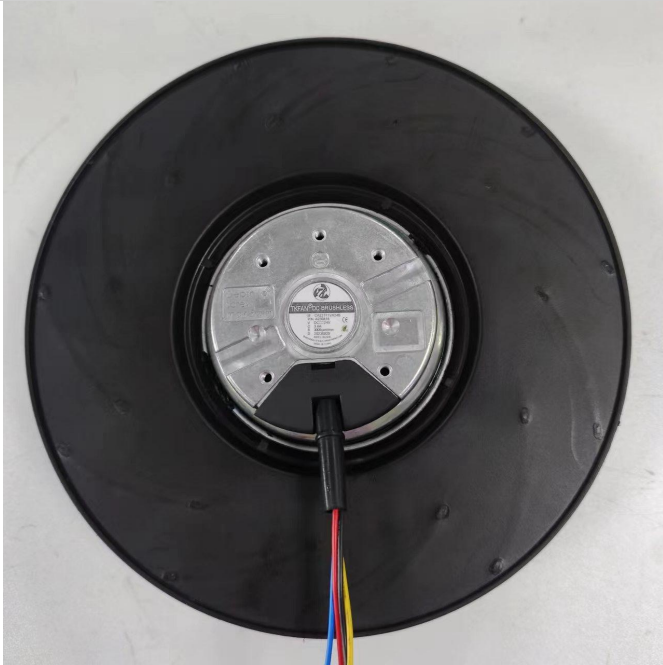
The Report of Acoustic Noise Test

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: 16.1dB(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:82.5dB(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:16.1dB(A); 背景噪音 Background Noise	
	

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※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

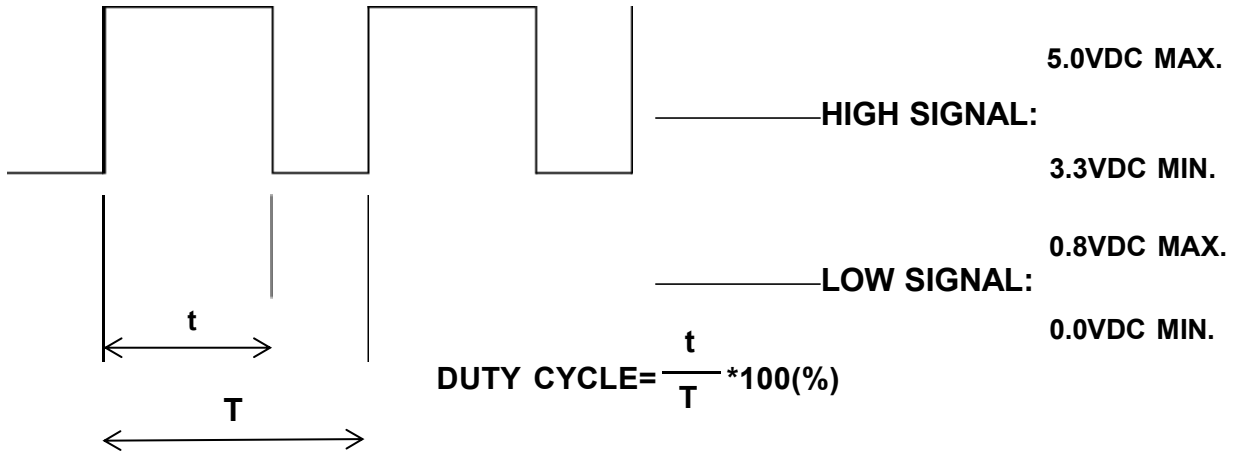


功能描述

Functional description

一. PWM CONTROL SIGNAL PWM 控制信号:

SIGNAL VOLTAGE RANGE 控制电压输入范围:0.0~+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 23% 25% DUTY CYCLE,THE FAN WILL BE ABLE TO START FROM A DEAD STOP.
- THE FAN SPEED CONTROL IS CLOSED-LOOP.

转速信号反馈介绍

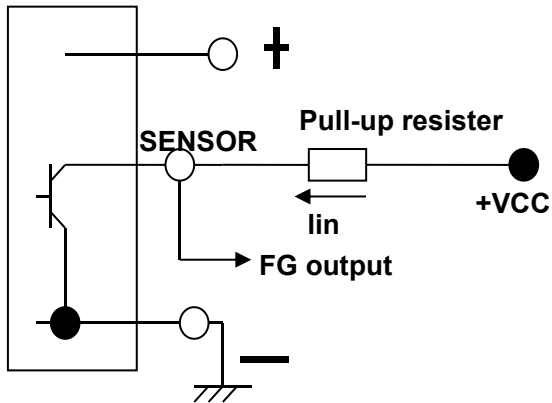
FG speed feedback signal is introduced

FG (Tach output type) Connection Diagram

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.

Inside of DC fan



One revolution

