

产 品 规 格 书
Product Specification

名 称 (Part Name):	轴流风机 Axial Fan	编 制 (Prepared by):	
型 号 (Model No.):	EC180-A910-C05 070-05S-F-501	校 对 (Checked by):	
顾客代码 (Customer Code):	/	审 核 (Reviewed by):	
版 次 (Version No.):	A/2	批 准 (Approved by):	

客户确认/日期 (Customer Approval/Date) : _____

换版记录 Description of Revision

版本号 No.	换版原因 Notes & Remarks	换版内容 Contents	修订人 Revised by	日期 Date
A/1	更新内容 3.1/4.5/4.6; 增加 10.5/10.6.	如相应修改/增减处所示	Ssx	2022.12.9
A/2	更新内容 4.6.	增加电流项	Ssx	2023.10.11



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 产品符合的标准要求/ Standards & Requirements of The Product Followed

2.1 本产品符合的标准/ Standards of the product followed

- EN IEC 60034-1 / GB 755 旋转电机.第一部分.定额与性能
EN IEC 60034-1 / GB 755 Rotating electrical machines - Part1:Rating and performance
- EN IEC 61000-6-2 电磁兼容 (EMC) 第6-2部分.通用标准.工业环境的抗扰度标准
EN IEC 61000-6-2 Electromagnetic compatibility (EMC) - part 6-2 : Generic standards - immunity for industrial environments
- EN IEC 61000-6-4 电磁兼容 (EMC) 第6-4部分.通用标准.工业环境的辐射标准
EN IEC 61000-6-4 Electromagnetic compatibility (EMC) - part 6-4 : Generic standards - Emission standard for industrial environments
- ISO 5801/ GB/T 1236-2017 工业通风机用标准化风道进行性能试验
ISO 5801/ GB/T 1236-2017 Industrial fan-Performance testing using standardized airways
- GB/T 2888-2008 风机和罗茨风机噪声测量方法
GB/T 2888-2008 Methods of noise measurement for fans blowers compressors and Roots blowers

2.2 本产品通过 CCC、CE 认证/ The fan is CCC, CE approved

2.3 本产品材料符合 RoHS 要求/ Materials are RoHS compliant

3.0 机械要求/ Mechanical Requirements

3.1 外形图/ Dimensional drawings

3.2 风机材质/ Fan Materials

- 风叶材质/ Material of blade
 - ☐ SPCC / 冷轧钢板 ☐ Aluminium alloy / 铝合金 ☒ Plastic / 塑料
 - ☐ Stainless Steel / 不锈钢 ☐ Others / 其它
- 电机磁材/ Materials of motor magnets
高强度漆包铜线 QZY-2 180°C/ High strength enamelled wire QZY-2 180°C
硅钢片/ Silicon Steel

- 轴承类型/ Bearing type

免维护滚珠轴承/ Maintenance free ball bearing

3.3 电机型号/ Motor: EC180M

3.4 平衡/ Balancing

风机在额定电压和频率下运转时，每个端面动平衡精度不低于G4.0，符合标准JB/T9101；
The residual unbalance weight is less than the permit value of G4.0 rating (balancing precision grade, according to the standard of JB/T9101) when the fan is running at rated voltage and frequency.

3.5 振动/ Vibration

风机振动速度有效值按照JB/T8689标准规定

Vibrating speed virtual value of fans accord with JB/T8689

3.6 产品净重/ Net weight: 约60 kg

3.7 风机寿命/ Fan life

估算值40000小时(在额定电压、环境温度为40℃、额定负载运转时)；

The designed lifespan of the fan is 40000 hours assuming the fan is running at rated voltage, rated load and 40 degree C environmental temperature.

4.0 风机性能/ Fan Performance

4.1 电压范围/ Voltage range

风机的额定电压为 400V，风机的额定电压范围是 380~480V；

The nominal voltage of the fan is 400V, and The nominal voltage range of the fan is 380-480V.

4.2 名义参数/ Nominal data

4.3 铭牌/ LABEL

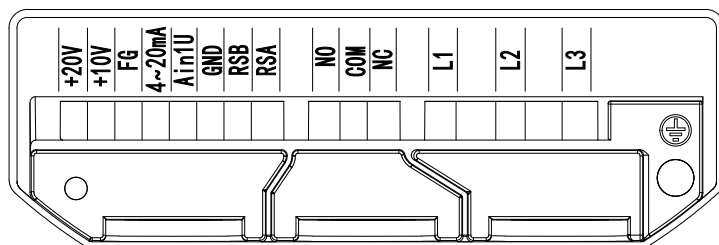
☐ 中文/Chinese

☐ 英文/English

2000402068		EC180-A910-C05 EC 直流无刷风扇用电动机 (外转子风机)	
3~380~480VAC 50/60Hz (5.20A 3500W) @400V 1050r/min η=55.0% (A, static) N40 N=58.0 VSD integrated			
F级 IP55 2021.XX.XX-XX 杭州顿力风机有限公司			

2000402068		EC180-A910-C05 Brushless EC Motor for Fan	
3~380~480VAC 50/60Hz (5.20A 3500W) @400V 1050r/min η=55.0% (A, static) N40 N=58.0 VSD integrated			
CL.F IP55 2021.XX.XX-XX Hangzhou Dunli Motor Fans Co., Ltd.			

4.4 接线图/ Wiring diagram



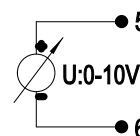
+20V	DC20V直流电源输出/Output 20V DC power supply, max. 40 mA
+10V	DC 10V直流电源输出/Output 10V DC power supply, max. 10 mA
FG	反馈信号/Tach output
4~20mA	4~20mA直流调速电流/Input 4~20mA DC regulation current
Ain1U	0~10V/PWM转速控制输入/0~10V/PWM Transfer control input, $R_i \geq 100K \Omega$
GND	信号接地/Ground, Reference ground for control interface
RSB	RS485, RSB, MODBUS interface
RSA	RS485, RSA, MODBUS interface

NO	继电器常开开关/ Relay normally open switch
COM	COM, contact rating 250 VAC / 3 A (AC1)
NC	继电器常闭开关/ Relay normally closed switch

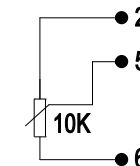
L1	Power: 3~380-400VAC 50/60HZ
L2	
L3	

客户回路 Customer circuit

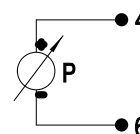
Speed setting via 0-10V



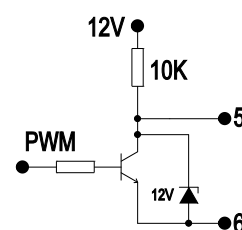
Speed setting via potentiometer



Speed setting via 4~20mA



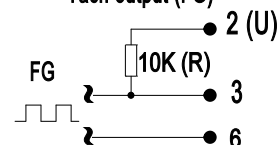
Speed setting via PWM



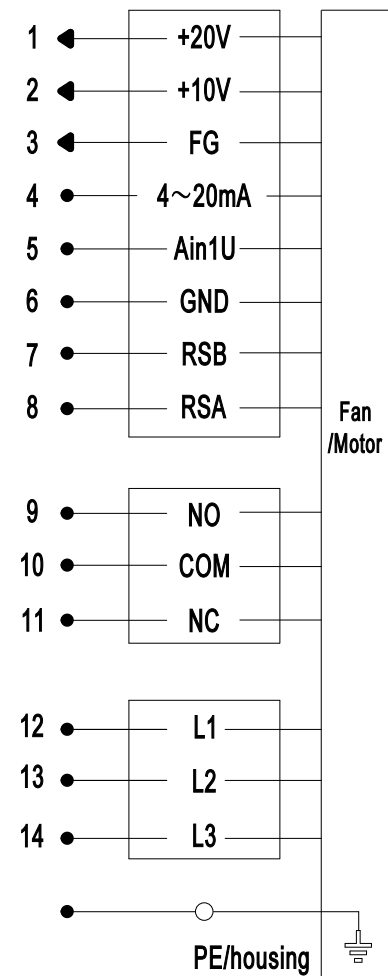
Speed setting via Bus



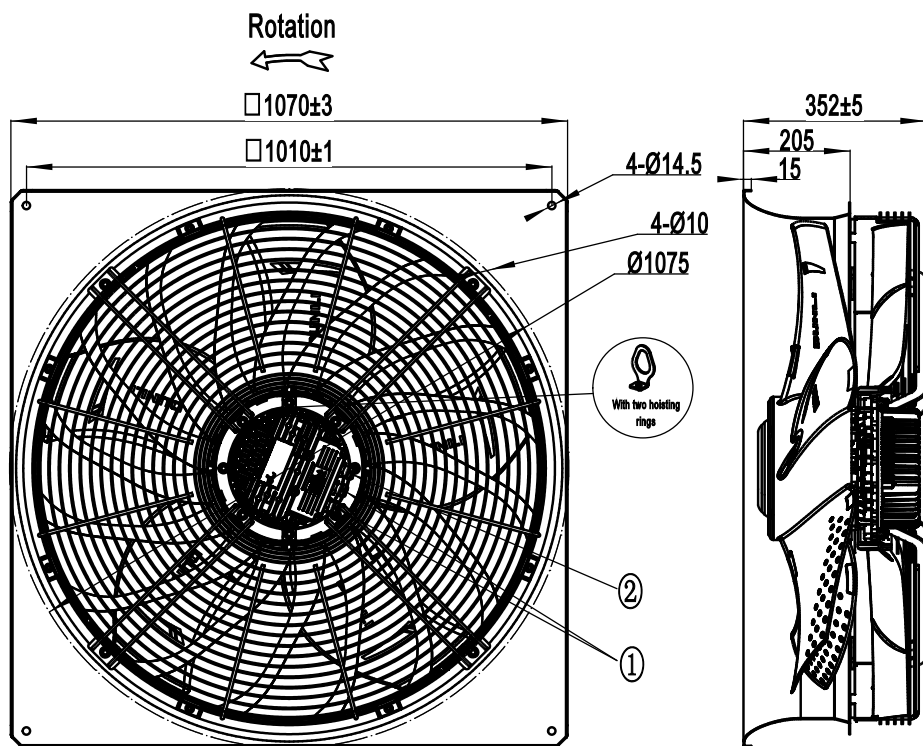
Tach output (FG)



连接器 Connection



3.1 外形图/ Dimensional drawings



吸风 "S"
Exhaust
Direction of airflow "S"

- ①金属格兰头适配电缆尺寸: 最小Ø4mm, 最大Ø6mm; 紧固扭矩: $6 \pm 0.6 \text{ N} \cdot \text{m}$
- ②金属格兰头适配电缆尺寸: 最小Ø8mm, 最大Ø12mm; 紧固扭矩: $6 \pm 0.6 \text{ N} \cdot \text{m}$
- ①Metal Cable Gland diameter: min.Ø4mm, max. Ø6mm; tightening torque: $6 \pm 0.6 \text{ N} \cdot \text{m}$
- ②Metal Cable Gland diameter: min.Ø8mm, max. Ø12mm; tightening torque: $6 \pm 0.6 \text{ N} \cdot \text{m}$

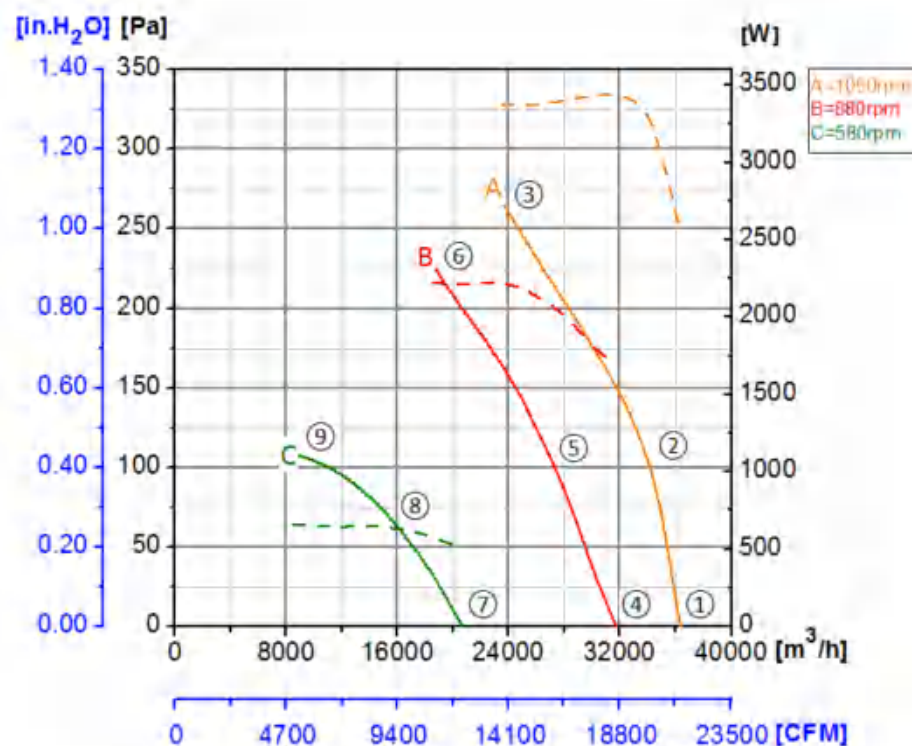
4.2 性能参数/ Nominal data

电压 Voltage [V]	频率 Frequency [Hz]	电流 Current [A](±16%)	输入功率 Input Power [W](±16%)	转速 Speed [r/min](±10%)	噪音(最大)* Noise Level [Lp dB(A)] Max	数据状态 Type of Data Definition
3~400	50/60	4.00	2550	1030	90	rt
3~400	50/60	5.20	3500	1050	/	ml

数据状态: / Definition of Data:

fa: 放空状态 / fa - Running at free air
ml: 最大负载点 / ml - Max load
me: 最大效率点 / me - Max efficiency
cs: 客户要求 / cs - Customer specified
cu: 客户机箱中 / cu - Customer unit
rt: 常规测试 / rt - Routine testing

4.5 风量特性曲线/ Air performance curve(s)



Data according to ErP Directive	Actual	Req.2015			
Installation category	A		Power consumption P_{ed}	W	3380
Efficiency category	static		Air flow q_v	m^3/h	23520
Overall Efficiency η_{es}	55.0%	37.0%	Pressure increase P_{fs}	Pa	270
Efficiency grade N	58.0	40	Speed(rpm) n	r/min	1050
Variable speed drive	yes		**ErP2015		
Data obtained at optimum efficiency level The ErP data is determined by using a motor-impeller combination in a standardized measurement setup					

4.6测试值/ Measured values

Item No.	Volt V	Speed r/min	Input W	Current A	Static Pressure		Air Flow	
					Pa	In H ₂ O	m ³ /h	CFM
1	400	1060	2540	4.00	0	0.00	36320	21365
2	400	1060	3301	5.16	100	0.40	34250	20145
3	400	1030	3377	5.20	270	1.07	23520	13835
4	400	883	1700	2.67	0	0.00	31750	18679
5	400	895	2061	3.19	100	0.40	27400	16118
6	400	890	2223	3.46	225	0.91	18580	10929
7	400	580	512	0.94	0	0.00	20700	12177
8	400	580	652	1.13	75	0.30	14850	8733
9	400	580	662	1.15	110	0.44	8500	4999

5.0 电气要求/ Electrical Requirements

5.1 控制方式/ Control methods:

0-10VDC / PWM: 5 个脉冲 / 4~20mA / MODBUS

5.2 输出电源/ Power output: +10VDC / +20VDC

5.3 转速输出信号/ Tach output: 5Pluses/ R

FG端连接R上拉电阻到U上拉电压端(DC电压), R的电阻值由 $R=U/1mA$ 确定; 当风机启动后, FG会输出占空比50%的方波信号,其频率为 $f=P*n/60$ (其中: P为脉冲数, n为电机转速)。

To connect a Pull-up Resistance between FG Line and Pull-up Line Voltage ($R=U/1mA$). FG will output a 50% duty cycle square signal once the motor started, and the frequency is " $f=P*n/60$ " (P-pulse count, n-motor rotational speed).

5.4 技术特征/Technical features

报警继电器/无源PFC/软启动等功能

Alarm relay / Passive PFC / Soft start.

5.5 保护模式/ Protect functions:

过温/堵转/欠电压/过电压/缺相/限流等故障停机, 故障解除, 风机可自动恢复运行。

When there's any protection of over-temperature, locked-rotor, under-voltage, over-voltage, phase missing or current limit occurred and caused the motor stopped, the motor will restart automatically after the fault removed.

5.6 电磁兼容/ EMC:

电磁兼容的抗扰度标准根据 EN IEC 61000-6-2 (工业环境)

EMC immunity to interference According to EN IEC 61000-6-2(industrial environment)

电磁兼容的辐射标准根据 EN IEC 61000-6-4 (工业环境)

EMC interference emission According to EN IEC 61000-6-4(industrial environment)

5.7 防护等级/ Level of protection: IP55

5.8 绝缘等级/ Insulation class: F

5.9 泄漏电流/ Leakage current: According to GB 4760.1 (EN IEC 60335-1)

5.10 工作制/ Type of Application: S1

5.11 安装方式/ Installation Mode:

■ 水平向下/ Rotor on bottom

■ 垂直/ Shaft horizontal

□ 特殊要求需与厂家联系/ Special request, please contact manufacturer

6.0 符合ISO9001质量体系认证

Product is built according to the ISO9001 Quality Management System.

7.0 使用和存储环境/ Operating & Storing Environmental Requirements

7.1 使用环境/ Operating environmental requirements

使用温度范围/ Operating temperature range: $-25^{\circ}\text{C} \sim +60^{\circ}\text{C}$

使用湿度范围/ Operating humidity range: $0\% \sim 95\% \text{ RH}$

(要求环境无凝霜或结露/ No Rime or Condensation with the Ambient)

海拔高度/ Operating altitude: $\leq 1000\text{m}$

(若海拔高度 $>1000\text{m}$, 需参照EN IEC 60034-1 / GB 755 标准)

(If the altitude is higher than 1000m , please refer to EN IEC 60034-1/GB 755)

大气压范围/ Atmospheric pressure Range: $80 \sim 110\text{Kpa}$

7.2 运输/贮存环境要求/ Transport/Storing environmental requirements

运输/贮存温度范围: $-40^{\circ}\text{C} \sim +80^{\circ}\text{C}$

Temperature range of transportation/storage: $-40^{\circ}\text{C} \sim +80^{\circ}\text{C}$

运输和贮存湿度范围: $0\% \sim 75\% \text{ RH}$

Humidity range of transportation and storage: $0\% \sim 75\% \text{ RH}$

8.0 包装和标识/ Packaging & Marks

8.1 包装/ Packaging: 纸箱包装/ Carton packaging

8.2 标识/ Marks

制造商名称、产品型号、重量、尺寸等;

Mark with the name of manufacturer, fan model number, date of production, weight, dimensions, etc.

9.0 附件/ Other Requirements On Accessories

9.1 控制器/ Controller

■ 内置/ Inner The Fan □ 外置/ External The Fan □ 不带/No

□ 根据销售订单配备/As per sales' requirements

9.2 连接件要求/ Connector

连接器/ Connector(□ 有/ Yes ■ 没有/ No)

型号/ Model:

端子/ Terminal (□ 有/ Yes ■ 没有/ No)

型号/ Model:

杭州顿力风机有限公司

HANGZHOU DUNLI MOTOR FANS CO., LTD.

10.0 警示与说明/ Warnings & Instructions:

10.1 本产品不适用于有明显破坏绝缘的气体或蒸汽的环境中; 不适用具有甲烷混合气体和煤尘爆炸危险的煤矿井下;

This product can not be used for these places where the corrosive gas and/or steam are exsiting, and/or in coal mine wells where there are methane mixed gas and coal that may cause dust explosion hazard.

10.2 产品内部使用球轴承, 避免转子受到冲击, 不适用于有强烈冲击、振动的地方;

The bearings used are ball bearing. Please prevent the rotor from strike and impact. The fan should be stored at and used for these places where have no strong impact force and shock.

10.3 本产品请专业人员按规格书或接线图连接线路, 安装时确保风机转动无卡滞现象; 风机启动时, 观察风机转向是否与标识一致;

Please do connections by professionals according to the wire diagram or this product specification. Please check to make sure there's no blocking with the fan before installation. Please make sure the fan is running in correct direction.

10.4 产品通电时请勿接触高压线路, 防止触电, 要求用户风机设备可靠接地;

Please do not touch any of the high voltage line while the product is powered on. The fan unit should be connected to ground well.

10.5 交流电源电缆中的地线(PE)一般仅可用做安全接地, 不能用做信号接地(GND), 地线(PE)和信号地线(GND)不可直接短路;

The ground wire(PE) of the AC power cable is only used for connecting safety ground, not for connecting signal ground. The ground wire(PE) and the signal ground wire (GND) cannot be connected directly.

10.6 风机断电后重启间隔须大于10秒, 否则可能出现峰值电流(165.0A/2.6ms)。建议断电5分钟后连接电缆;

The restart interval is more than 10 seconds after power failure, or the maximum peak current(165.0A / 2.6ms) may occur. Suggest connecting wires after 5 minutes of power failure.

10.7 产品需要通风冷却, 使用时请考虑周边通风条件, 并防止烫伤;

In order to cool down the motor part, please use this product under a well-ventilated condition and beware of avoiding being scalded during operation.

10.8 产品运转时请勿靠近旋转部件，并防止异物进入内部；

Please keep away from rotating parts while the product is running, and no exoteric matter getting into inside of the product.

10.9 移动产品时请勿拉扯线束，避免线路断裂或绝缘受损；

In order to prevent the product from damage by the impact voltage, please use VSP to control fan start or stop. Do not use relay or other mechanical switch on the power supply line to control fan start or stop frequently.

10.10 按本规格书中的参数评价产品，若工作参数发生变更，请与本公司联系；

Please use this product under the conditions specified on this specification, and please contact with us if your application is out of the applicable conditions specified in the spec sheet.

10.11 产品自购买之日起，质保期为壹年 (具体以订货合同为准)；

The warranty of the products is normally one (1) year (accordance to contract or purchase order).

11.0 其它/ Others

11.1 本产品的知识产权属于本公司 在本产品的使用上不会发生专利争议问题；如果应用本产品形成有关新的产品或新方法或新的技术方案造成的专利侵权，本公司不予保证；

We have intellectual rights on this product. We are NOT responsible for any patent disputes caused by using this product on other products/technical solutions.

11.2 未经本公司许可不得将本产品规格书泄漏给其它任何第三方；

It should be assured that this specification can NOT be revealed to any third party without the consent of our corporation.

12.0 特别提示/Attentions

若未按本规格书之要求和未按警示与说明所列情形违规操作，由此引起的质量问题与事故由用户自行承担；

If customer does NOT comply with the stipulations of this specification or the listed warnings and instructions, customer should undertake the due obligation for all the quality issues and accidents.