

# AC DRIVES DIRECT DRIVE FAN MOTORS

HVLS CEILING FAN SOLUTION



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# Permanent Magnet Synchronous Motors

Direct Drive Motors is a low speed Permanent Magnet AC Synchronous Motors ( High Volume Low Speed ) are the most common types of motors in industrial big ceiling fans (up to 7 m).

## The power of PMSM technology

PMSM technology is one of the most advanced examples of fan engineering on the market today. Compared with traditional brush and AC motors, the Permanent Magnet Synchronous Motor provides a larger, more comfortable air volume that is both dynamic and quiet.

PMSM is an electromagnetic device produced by a permanent magnet as a medium for the conversion of mechanical energy and electromagnetic energy to each other. The high efficient Permanent Magnet Synchronous brushless direct drive motor delivers maximum performance when it comes to speed control

Permanent Magnet Synchronous brushless direct drive motor efficiency. Remarkably energy efficient, the PMS Motor is ultra efficient design with next to no maintenance

-  Powerfull, High torque
-  Very Quiet
-  High Energy Savings
-  Humidity Control
-  Long Lifetime
-  Save space

## Advantages & Features

### Compact Design, Save Place

The DD motor is small and lighter, high power density ( to 10kw/kg), large output torque

### High Efficiency

Permanent Magnet rotor design achieving the highest efficiency values, wider torque/speed operating range

### Maintenance Free, Long service Life

long service life, self-heat dissipation system, Truly maintenance-free

### Reduce Cost

More than 50% energy saving. Gearless, no gearbox to maintain due to direct driven fan low noise, reduce losses, improves the transmission efficiency

### No transformation of the movement pattern

With a direct drive motor system, there is no need for mechanical linkage (gearbox, belt, etc.) between the payload and the motor. Thus there are no backlash, clearance, friction or elasticity problems. This makes for a much stiffer and more easily controlled system.

### Multi-pole motor

With a multi-pole design, NIETZ motors are capable to generate very high torque. In addition, this high torque can also be sustained over a much larger speed range.

### Low Noise, High Torque

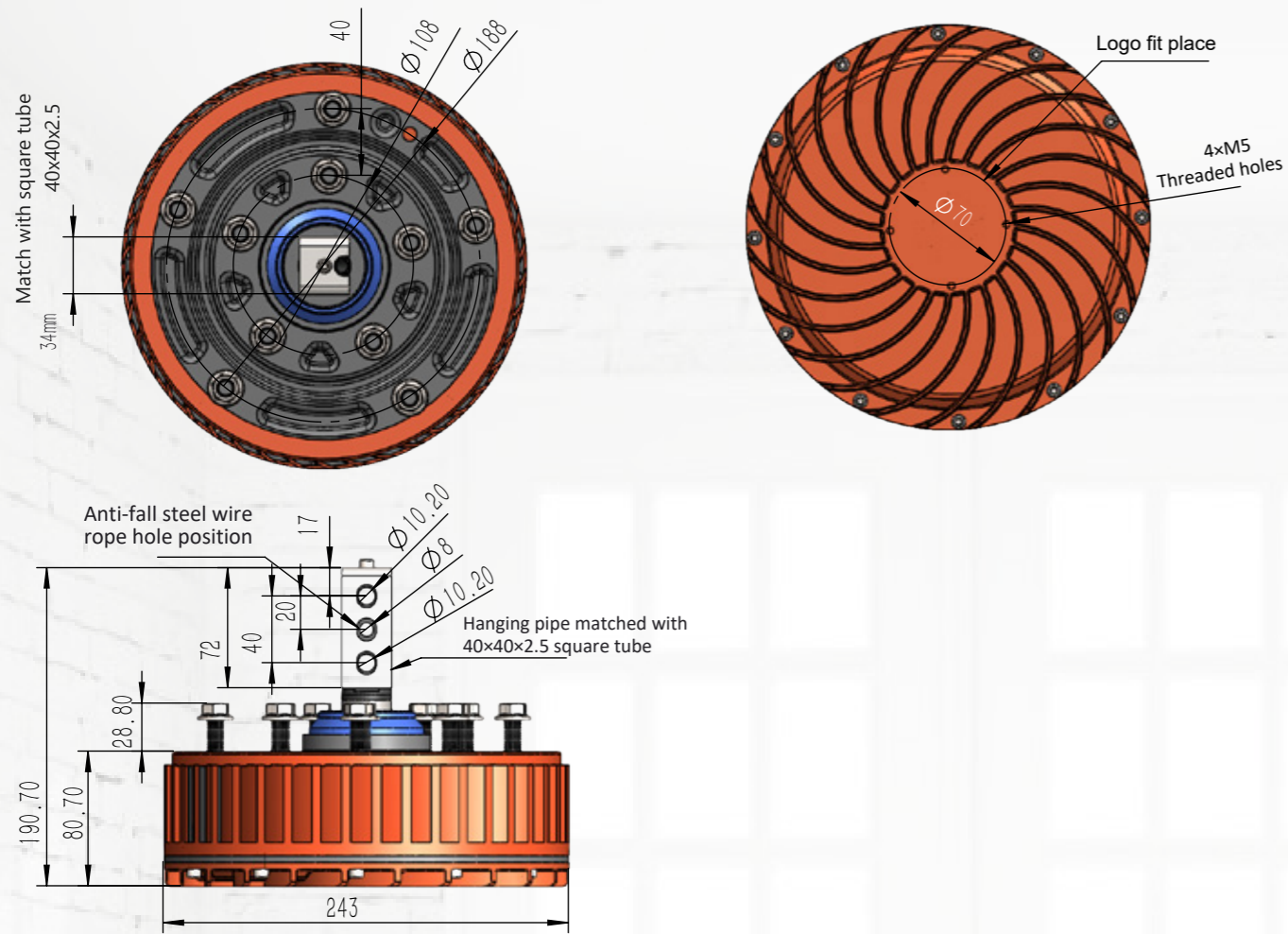
Low speed offer the advantage of moving a significant amount of air whilst consuming less energy compared to traditional ventilation systems. Low speed also offer the advantage of very low noise levels and improve the environment, making conditions cooler and more comfortable.

## 220V PERFORMANCE DATA

Models		NZ03H2	NZ05H2	NZ07H2	NZ09H2	NZ12H2	NZ15H2
Rated power	W	300	500	750	900	1200	1500
Rated Current	A	1.9	2	2.5	2.6	3.5	4.4
Rated speed	rpm	80 to 150	80 to 150	60 to 100	60 to 100	50 to 65	50 to 60
Rated torque	Nm	22	37	56	75	147	180
Lq inductance	mH	27	29	45	49	63	48
Ld inductance	mH	27	29	45	49	63	48
Rated back EMF @ 60 rpm	V	60	77	92	111	180	185
Pole pairs		26	26	28	28	42	42
Protective class		IP65	IP65	IP65	IP65	IP65	IP65
Noise	dB(A)	≦ 35	≦ 35	≦ 36	≦ 36	≦ 37	≦ 40
Dimension of Motor	mm	189*243	189*243	275*290	275*290	293*407	293*407
Weight of Motor	Kg	8.5	10	16.5	18.5	32	34
Applicable fan diameter	M	2.4 to 3.6	3.6 to 4	4.2 to 5	4.9 to 5.5	6.1	7.3
Applicable fan Blades	unit	5 to 6	5 to 6	5 to 6	5 to 6	5 to 6	5 to 6

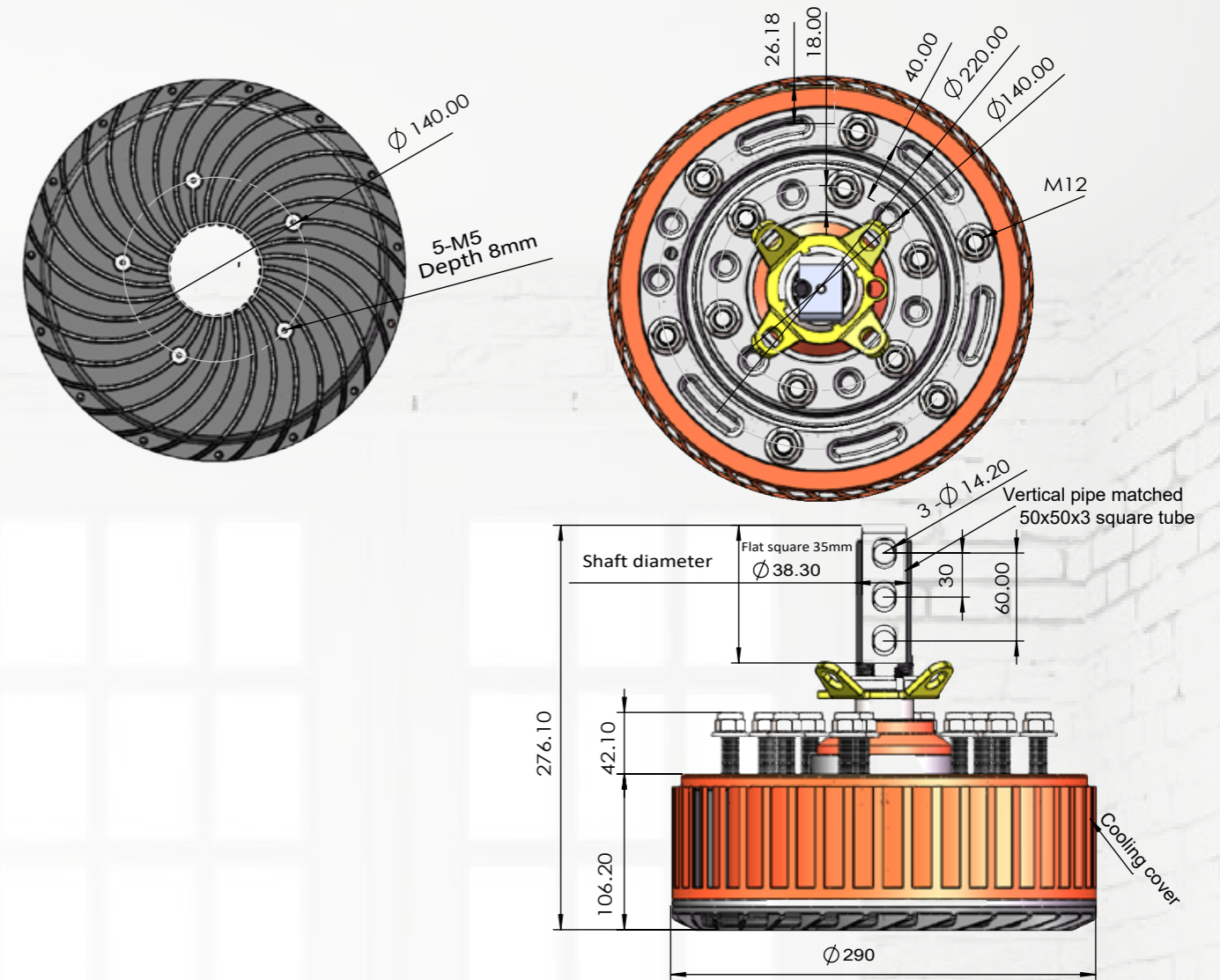
## 380V PERFORMANCE DATA

Models		NZ09H4	NZ12H4	NZ15H4
Rated power	W	900	1200	1500
Rated Current	A	1.7	2.0	2.6
Rated speed	rpm	60 to 100	50 to 65	50 to 65
Rated torque	Nm	73	154	175
Lq inductance	mH	22	94	112
Ld inductance	mH	21	94	112
Rated back EMF @ 60 rpm	V	290	220	285
Pole pairs		28	42	42
Protective class		IP65	IP65	IP65
Noise	dB(A)	≦ 36	≦ 37	≦ 40
Dimension of Motor	mm	275*290	293*407	293*407
Weight of Motor	Kg	18.5	32	34
Applicable fan diameter	M	4.9 to 5.5	6.1	7.3
Applicable fan Blades	unit	5 to 6	5 to 6	5 to 6



Technical Data

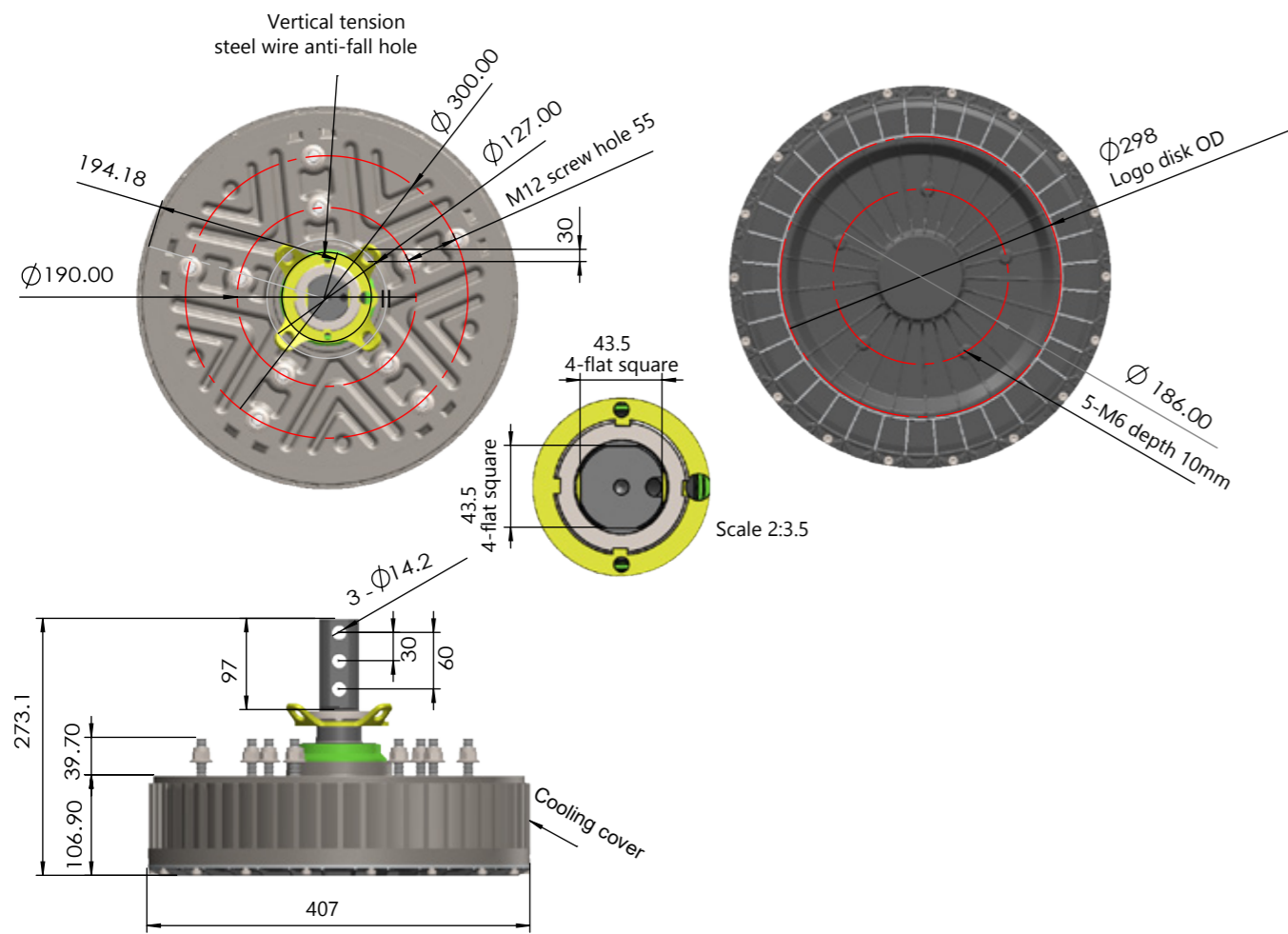
Item		NZ03H2	NZ05H2
Rated power	W	300	500
Power supply	V	220	220
Speed range	rpm	80 to 130	80 to 130
Rated current	A	1.9	2.0
Pole number		52	52
Frequency	Hz	26 at 60 rpm	26 at 60 rpm
Protective class		IP65	IP65
Applicable fan diameter	M	2.4 to 3.6	3.6 to 4.9



Technical Data

Item		NZ07H2	NZ09H2/4
Rated power	W	750	900
Power supply	V	220	220/380
Speed range	rpm	70 to 120	70 to 120
Rated current	A	2.5	2.6/1.7
Pole number		56	56
Frequency	Hz	28 at 60 rpm	28 at 60 rpm
Protective class		IP65	IP65
Applicable fan diameter	M	4.9 to 5.5	5.3 to 6.1

Dimension of 1200W, 1500W



Technical Data

Item		NZ12H2/4	NZ15H2/4
Rated power	W	1200	1500
Power supply	V	220/380	220/380
Speed range	rpm	55 to 80	550 to 80
Rated current	A	3.5/2.6	4.3/2.6
Pole number		74	74
Frequency	Hz	37 at 60 rpm	37 at 60 rpm
Protective class		IP65	IP65
Applicable fan diameter	M	6.1 to 7.3	7.3



INTEGRATED  
AC DRIVES  
HVLS CEILING FAN SOLUTION





高效节能



静音低噪



平稳启停



无线控制

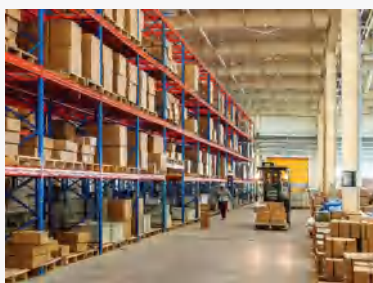


可靠耐用



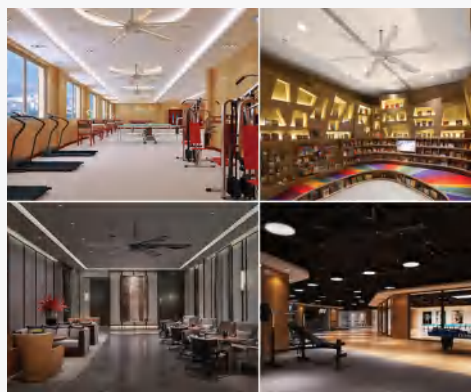
## 高效节能 High Efficiency

AEO及同步电机参数自匹配算法，节能省电。  
AEO and motor parameters auto-adaptation algorithm for PM motor to achieve high energy efficiency.



## 静音低噪 Quiet and Noiseless

专用同步电机电磁噪音抑制算法，静音舒适。  
Special electromagnetic noise suppression algorithm for PM motor, quiet and comfortable.



## 平稳启停 Smooth start and stop

大惯量同步电机算法，启停过程平滑无抖动无反转。  
Algorithm for PM motor with large inertia, smooth start and stop process without jitter and inversion.



## 无线控制 Wireless control

即能实现点对点的无线控制，又能实现大厂区的无线集中控制，通讯可靠性高。

Support both point-to-point wireless control and wireless centralized control with high communication reliability.



## 无风扇设计 Fanless design

CF101以无风扇设计为核心，重新定义工业通风控制的可靠标准。

With a fanless design at its core, CF101 redefines the reliable standard for industrial ventilation control.



## 可靠耐用 High Reliability

独特的类IP54全密封结构，适应各种恶劣环境。风扇底置，侧面出风，避免风扇被异物堵塞。

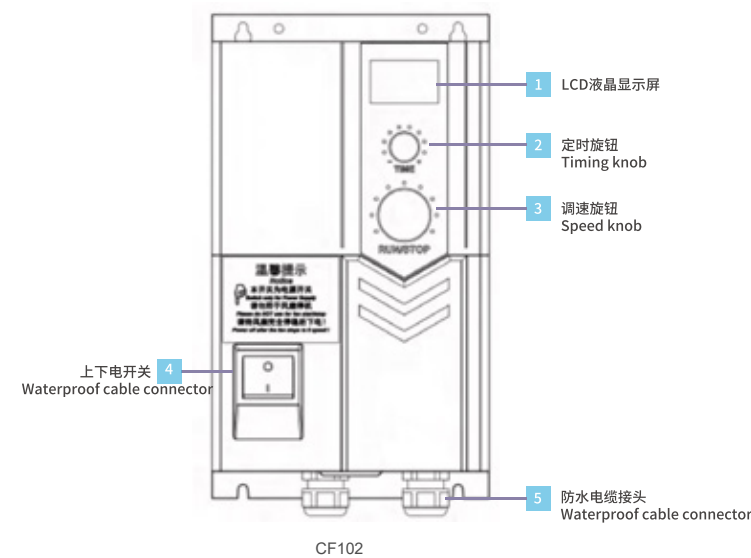
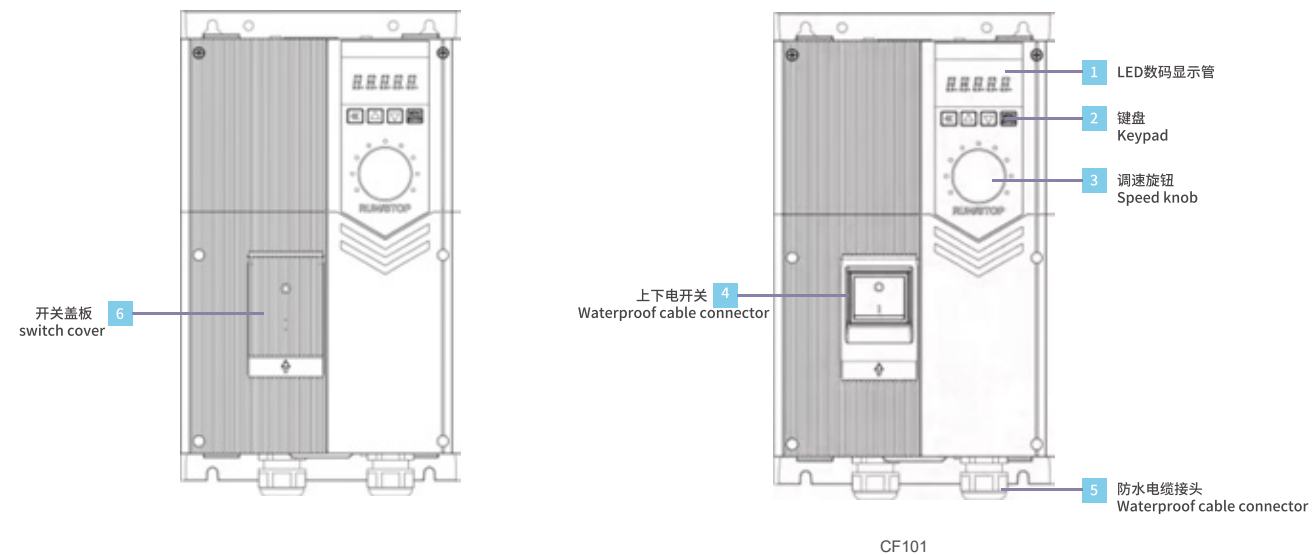
IP54/IP50 solution for harsh environment with dirt polutions by unique mechanical and cooling design. Fan on bottom and cooling air outlet on the sides to prevent the fan from being blocked by foreign matters.

## 技术规格——Technical specification

### 型号规格/ Model Specifications

CF102  
1
4T  
2
1D5  
3

序号 / number	型号 / Model	说明 / Description
1	CF102	代表变频器CF102系列 / Represents the frequency converter CF102 series
2	4T	代表电压等级: 4T~三相380V; 2S~单相220V Representative voltage level: 4T~three-phase 380V; 2S~ single-phase 220V;
3	1D5	代表功率等级, 1D5代表1.5kW / Stands for power level, 1D5 stands for 1.5kW



## 技术规格——Technical specification

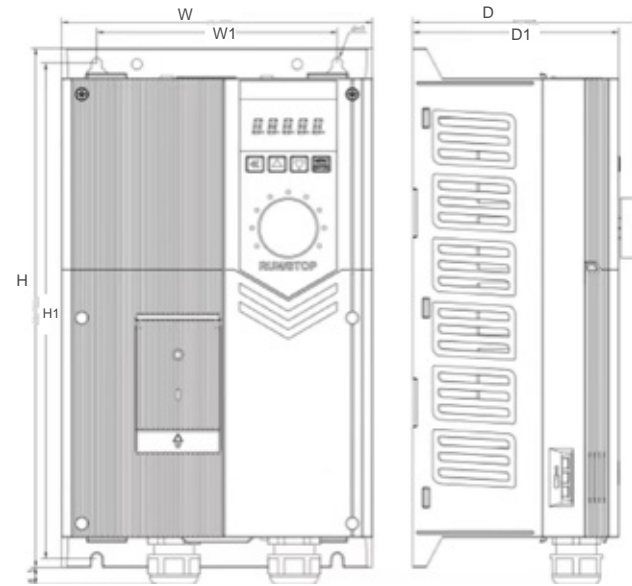
### 技术指标 / Technical specification

项目 / Item	规格 / Specifications	
输入 / Input	电压 / Voltage	单/三相: 200V-240V -15%~+10% / Single / three-phase: 200V-240V-15% / 10% 三相: 380V~480V -15%~+10% / three-phase: 380V-480V-15% / 10%
	频率 / Frequency	50/60Hz ±5%
	最大不平衡度 / Maximum unbalance degree	3%
输出 / Output	输出电压 / Output voltage	0~100%输入电压 / 0mm 100% of input
	输出频率 / Output frequency	0~590Hz
主要控制规格 / Main Control	控制模式 / Control mode	V/F, 矢量控制 / V/F, Vector control
	起动转矩 / Starting torque	0.5Hz, 150%
	过载能力 / Overload capacity	150%额定输出电流 60s; 180%额定输出电流 3s / 150% rated output current, 60s; 180% rated output current, 3s
	载波频率 / Carrier frequency	2k~16kHz
	速度设定分辨率 / Speed setting resolution	数字: 0.001Hz, 模拟: 最大操作频率的0.5% / Digital: 0.001Hz, analog: 0.5% of the maximum operating frequency
	开环转速控制精度 / Open-loop speed control accuracy	±5%额定 / ±5% rated
	控制命令来源 / Control the source of the command	操作旋钮、通讯控制字、外引键盘 / Operation knob, communication control word, external guide keypad
基本功能 / Basic function	设定频率来源 / Set frequency source	操作旋钮、通讯给定、外引键盘 / Operation knob, communication setting, external guide keypad
	基本功能 / Basic function	电机自学习、自动负载补偿、自动稳压功能、加减速曲线控制、直流制动、交流制动、速度限制、转矩限制、电流限制、飞车启动、瞬停不停、自动复位等 / AMA, automatic load compensation, DC compensation, acceleration and deceleration curve control, DC braking, AC braking, speed limit, torque limit, current limit, fly start, KEB, automatic reset, etc.
保护功能 / Protection function	电源缺相保护, 欠压保护, 过压保护, 过流保护, 过载保护, 输出缺相保护, 输出短路保护, 输出接地保护, 变频器过热保护, 电机过热保护, 信号断线保护等 / Short circuit, Ground fault, Line phase loss, under voltage, over current, overload, over temperature, motor thermal protection, motor phase loss, control wire broken etc.	
环境 / Environment	防护等级 / Protection Degree	IP50 : IP54(CF101)
	工作温度 / Operating temperature	运行范围-10°C~45°C, 45°C可额定负载运行, 45°C以上需降容使用 / Operating range -10 °C ~ 45 °C, 45 °C rated load derate from 45 °C above.
	工作湿度 / Working humidity	5%-85% (95%时不结露) / No condensing at 95%
	振动 / Vibration	1.14g
	最大海拔 / Maximum altitude	3000m, 1000m以上需降容使用 / Derate from 1000m and above.
电机 / Electric motor	电机电缆长度 / Motor cable length	屏蔽电缆: 50米; 非屏蔽电缆: 100米 / Shielded cable: 50m; unshielded cable: 100m
	电机支持类型 / Motor support type	异步电机、同步电机 / IM、PM

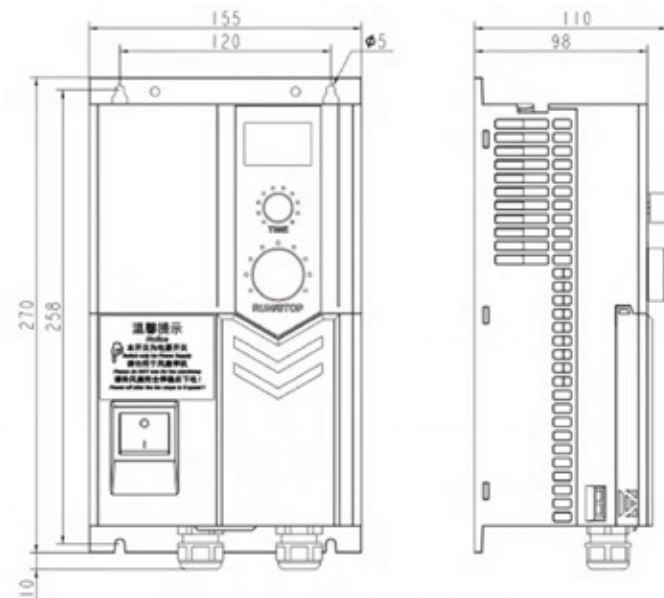
型号 / Model	功率/Power (kW)	电压/Voltage (V)	输入电流/ Input Current (A)	输出电流/ Output Current (A)	通风量/Air (m <sup>3</sup> /h)
CF101-2SD75	0.75	1×200-240	9.0	3.5	-
CF101-2S1D5	1.5	1×200-240	15	6.5	-
CF101-4TD75	0.75	3×380-480	3.6	2.2	-
CF101-4T1D5	1.5	3×380-480	5.9	3.6	-
CF101-4T2D2	2.2	3×380-480	8.3	5.1	17.2
CF102-2SD75	0.75	1×200-240	9.3	4.5	17.2
CF102-2S1D5	1.5	1×200-240	15.5	6.8	17.2
CF102-4TD75	0.75	3×380-480	3.6	2.2	17.2
CF102-4T1D5	1.5	3×380-480	5.9	3.7	17.2
CF102-4T2D2	2.2	3×380-480	8.3	5.1	17.2

## 技术规格——Technical specification

### 外形尺寸 / Overall dimension



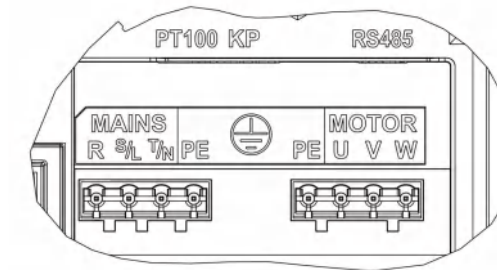
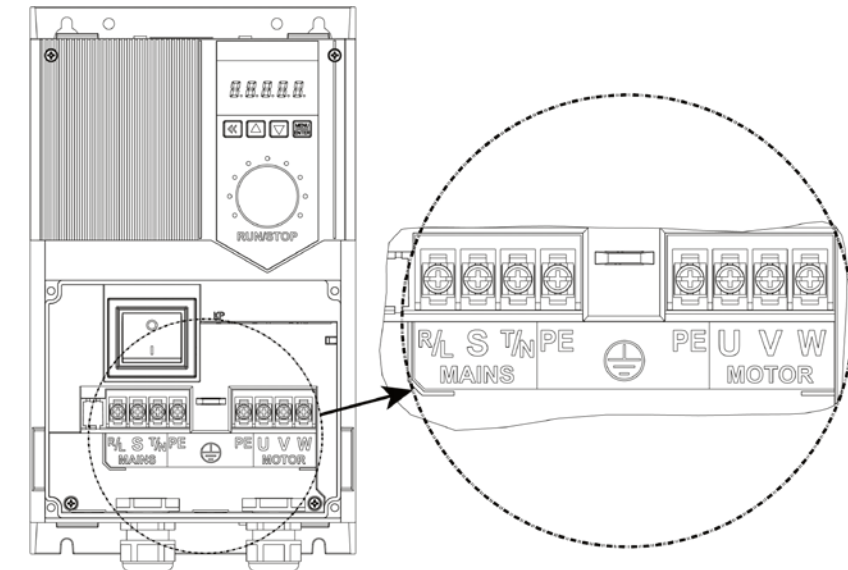
型号 / Model	功率及电压等级 / Power and voltage level (V)		尺寸 / Size (mm)						
CF101	1×200-240V	3×380-480V	W	H	D	W1	H1	D1	d
	0.75-1.5kW	0.75-2.2kW	155	260	114	120	248	103	5



型号 / Model	功率及电压等级 / Power and voltage level (V)		尺寸 / Size (mm)						
CF102	1×200-240V	3×380-480V	W	H	D	W1	H1	d	
	0.75-1.5kW	0.75-2.2kW	155	280	109	120	258	5	

## 技术规格——Technical specification

### 接线端子 / Description

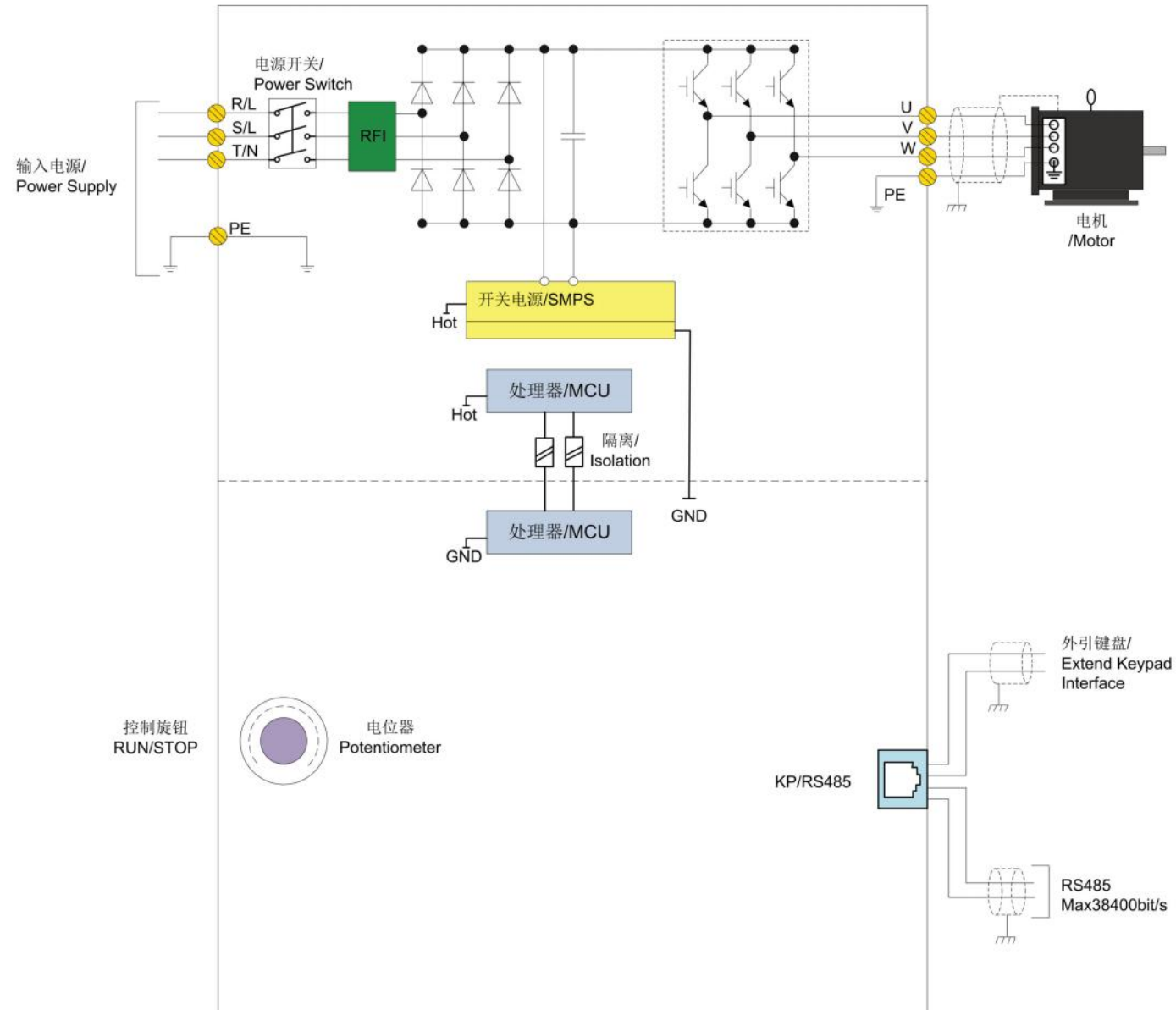


CF102

CF101, CF102 单相 / Single phase 200V: 0.75-1.5kW			CF101, CF102 三相 / Three phases 380V: 0.75-2.2kW		
端子功能 / Terminal function	端子标识 / Terminal identification	功能说明 / Function description	端子功能 / Terminal function	端子标识 / Terminal identification	功能说明 / Function description
电源输入 / Power input	R/L	输入火线 / Input phase line	电源输入 / Power input	R, R/L	输入R相 / Input R phase
	S/L	输入火线 / Input phase line		S, S/L	输入S相 / Input S phase
	T/N	输入零线 / Input zero line		T/N	输入T相 / Input T phase
	PE	输入接地 / Grounding for line in		PE	输入接地 / Grounding for line in
电源输出 / Power output	U	电机U相 / Motor U phase	电源输出 / Power output	U	电机U相 / Motor U phase
	V	电机V相 / Motor V phase		V	电机V相 / Motor V phase
	W	电机W相 / Motor W phase		W	电机W相 / Motor W phase
	PE	电机接地 / Grounding for motor		PE	电机接地 / Grounding for motor

# 技术规格——Technical specification

电气接线图 / Electrical Diagram



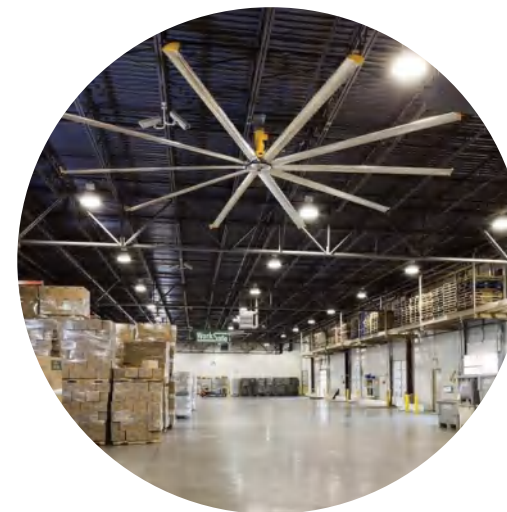
# 增强配置—CF102 Enhanced Features

## LCD显示

LCD display



LCD显示：多行LCD显示，显示信息直观、丰富，支持多国语言。  
LCD display: Multi-line LCD display for direct and rich information; Support multiple languages.



## 无线控制

Wireless control



无线控制：点对点无线监控/无线集中监控/远程监控/无线参数拷贝  
Wireless control : Wireless point-to-point monitor and control/  
Wireless centralized moitor and control/  
Monitor and control through web network/  
Wireless for parameter copy

## 温控功能

Control with temperature input



温控功能：可以通过采集环境温度控制风扇的运行。  
Control with temperature input: Provide the function to control the fan with sensed environment temperature.



## 定时功能

Timing function



定时功能：方便于客户设定工业风扇工作时长，自动停机。  
Timing function: Customer can set the running time and get the fan stop automatically.

# 核心设计—CF101

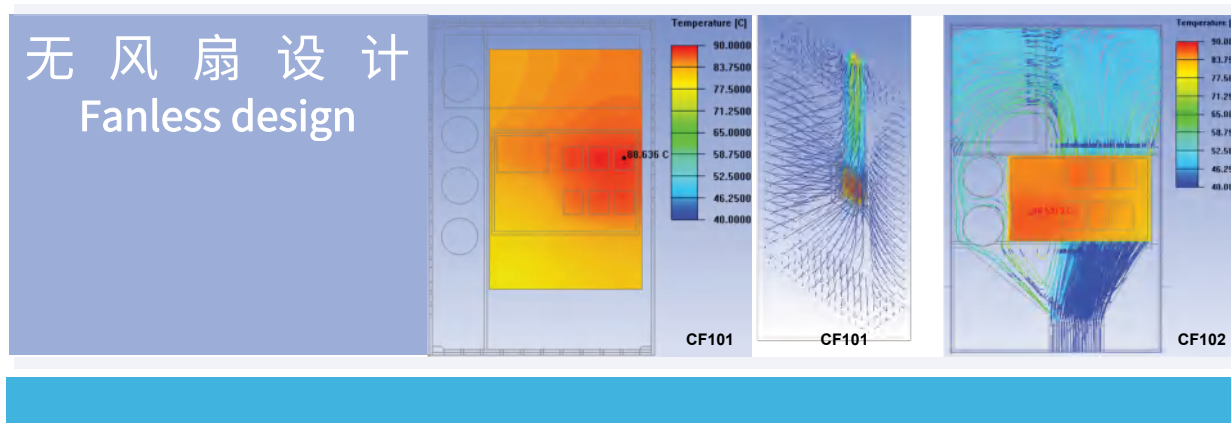
## The core design

先进的软件控制算法 / Advanced software control algorithm  
 独特的散热设计 / Unique heat dissipation design  
 独特的器件驱动方式 / Unique device driving method



无风扇设计，提高产品可靠性  
 Fanless design enhances product reliability

无风扇设计，实现“超静音”运行  
 Fanless design, achieving "ultra-quiet" operation

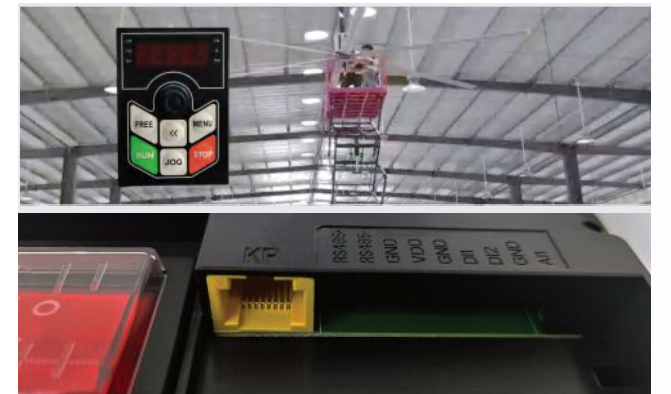


# 传承家族基因，性能始终如一 / Heritage passed on, performance carried on

操作友好、调试便捷  
 User-friendly interface、Debugging convenience



内置键盘，面板调试，键盘锁定功能，防误操作  
 Built-in keypad, parameter adjustable, keypad lock function, anti-misoperation

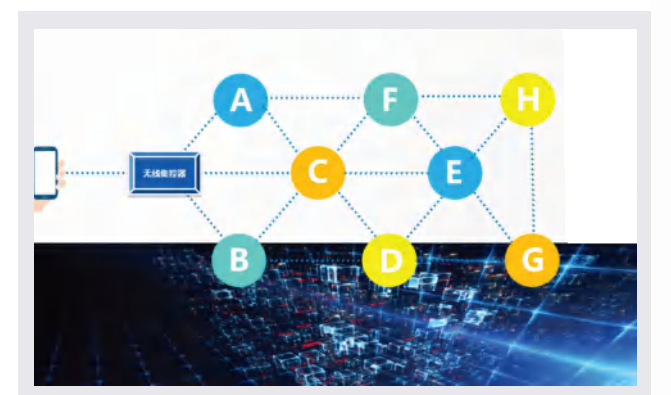


支持外引键盘及拷贝键盘，批量调试便捷  
 Supports external keypad and keypad cloning, facilitating batch debugging

定制灵活  
 Flexible customization



独特的散热技术，可定制"IP54"防护等级  
 Unique cooling technology, with a customizable "IP54" protection level



可定制无线通讯功能，实现无线集控  
 Customizable wireless communication function enables wireless centralized control



# Application 应用场景

工业风扇一体控制器广泛应用于物流仓储、五金模具、机械加工、汽车制造、家具制造、纺织服装、包装印刷、轨道交通、航空航天、机场大厅、礼堂展厅、商业中心、汽车4S店、体育场馆、院校机构、户外空间等各种场景。

The AC Drives can be used to control the HVLS fans applied in situations including warehouse, molds factory, machining factory, automobile factory, furniture factory, airport lobby, commercial exhibition hall, 4S Automobile shop, gymnasium, outdoor spaces and other situations where the normal air-conditioner is not suitable.

