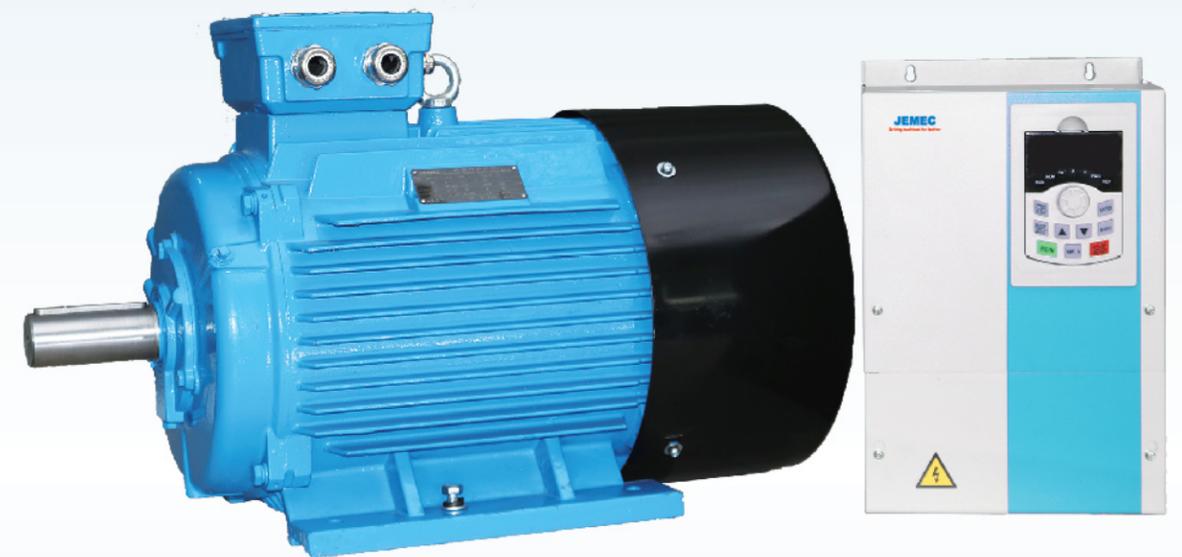


**JEMEC**  
Driving machines for better



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**JPM系列**  
**工业应用永磁同步电机**  
JPM Series Permanent Magnet Synchronous Motor  
for Industrial Application

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JPM 系列电动机是我司为响应国家节能减排号召，是一种全封闭、自扇风冷式稀土永磁同步电动机，它具有高过载能力，高效率，高功率因数，运行平稳，维护简单，互换性强等已系列特点，集中了异步电机和一般同步电机的优点，冷却方式 IC411、工作制 S1、安装方式符合 IEC 和 DIN 标准，具有国际通用性是出口及替代进口的理想产品。

JPM series motor is full enclosed, self fan air cooling rare earth materials permanent magnet synchronous electric motor, developed for energy saving and pollution reduction of policy of nation. The feature includes high overloading capacity, high efficiency and high power factor, high interchangeability, smooth running, ease maintenance, it combines the advantage of asynchronous motor and general synchronous motor, the air cooling type: IC411, Duty: S1, mounting mode meets standard IEC and DIN, it has universal use and applied in wide range of screw air compressor and is good substituted for imported branded motor.

JPM 系列电动机具有超强的安全性，电机采用钕铁硼永磁体，180℃不失磁，绕组采用变频电机特殊浸漆工艺，保证电机安全可靠。

JPM series motor has high security level, it adopted with NdFeB permanent magnet and won't loss of field at 180℃, its winding made with Class F insulation and processed with double varnish impregnation, ensure that the coils can withstand abnormal voltage fluctuations and the impact of multiple types of harmonics.

JPM 系列电动机具有超强的节能性，当设备处于部分负载时电机能追踪负载功率改变转速，并且能保持高的效率，实现节能，当负载满负荷运行时，电机能高效运行。与普通变频电机相比，调速范围更广，节能性能更卓越，且在低速运行时，能保持很高的电机效率，符合 GB 30253-2013 变频驱动永磁电机能效标准，远超 IE4 效率。

JPM series motor has the feature of high energy saving, it can traces the loading power and changes rpm while the system is partial load running, and maintains in the high efficiency level as well as it is full load running, comparing with other frequency conversion motor, permanent magnet motor has a wider range of speed control, more excellent in performance, and keep the high efficiency level while it is low speed running, it meets the efficiency standard of frequency conversion driving permanent magnet motor of GB 30253-2013, much better efficiency performance than IE4.

JPM 系列电动机具有超广的适用范围，具备与压缩机完美的匹配性，助推空压机整机效率远超国标 1 级能效。具备与电梯、风机、水泵、皮带机、机床、纺织机械、电动汽车等器械的高度匹配性，能广泛用于石油、化工、电力、交通、纺织、工矿等行业。

JPM series motor has broad range of application and is compatible perfectly with screw air compressor, enhance the efficiency of screw air compressor much better than level 1 efficiency of national standard. It is highly compatible with machinery of elevator, air blower, water pump, textile interweaving machine and electric auto etc, can be widely applied to the industry of petroleum, chemistry, electricity, transportation and mining activity.

JPM 系列电动机具备满足客户的各种特殊定制性，能根据客户要求，定制各种转速；能根据客户要求，定制强迫风冷式结构电机。

JPM series motors can meet customers' special customization, and can customize various speeds according to customers' requirements; According to customer requirements, customized forced air - cooled structure motor.

- 结构简单可靠：无编码器矢量控制，可实现从 0~1.2 倍额定转速的平稳无级调速，可实现无限次起停。
- 防护等级高：IP55 防护等级免除低防护等级电机永久磁钢吸附铁质灰尘阻塞气隙的弊端。
- 抗退磁能力强：采用内插磁钢结构并设计较高的最大退磁工作点。
- 功率密度大体积小：电机转子永磁体磁场与定子旋转磁场同步运行无滑差损耗，定子绕组无需从电网吸收无功电流，从而极大的降低了电机损耗和温升，在同等功率和转矩下电机质量和体积可以减少至 70%，机座号或中心高可降低 1~2 个等级。
- 超高效率运行：真正超高效率，效率高于 IE4 效率标准值（杂散损耗按 112B 法推荐值）。并可根据用户需求提供符合 IE5 或高于 IE5 效率标准的产品。同时电机可在全范围转速或功率范围提供卓越效率。
- 电气性能、安装尺寸符合 GB 及 IEC 标准，与普通工业应用三相异步电机有很好的互换性，方便用户直接将传统三相电机升级为更节能的永磁同步电机。

■ Simple and reliable structure, encoder-free vector control, speed is stepless adjustable from 0 to 1.2 times rated speed, and unlimited times start/stop is available

■ High protection: the IP55 protection can prevent the permanent magnet from attracting iron impurities in air-gap of motor

■ High coercivity: adopts interior permanent magnet rotor and higher working point of demagnetization

■ Higher power-density, smaller size: the magnetic field of the rotor synchronously rotate with the rotating magnet field of stator, no slip loss. The stator winding don't need to absorb idle current to excite, thus greatly reduce the loss and temperature rise. At the same power/torque, The motor mass and volume can be reduced to 70% at the same power and torque, and the center height can reduce 1-2 stages

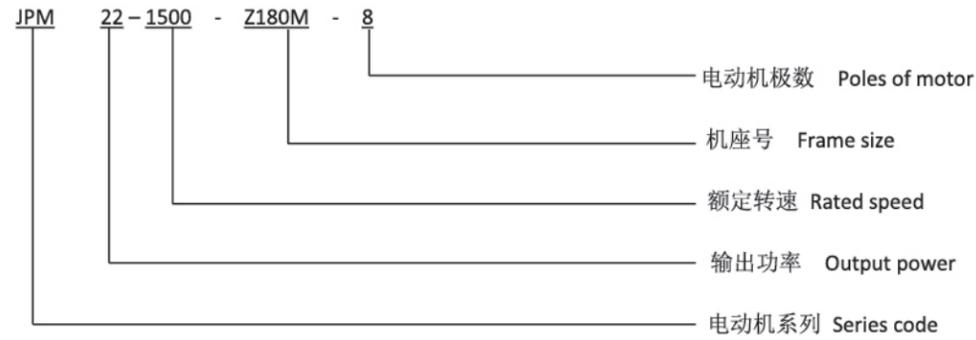
■ Ultra-high efficiency: it's real ultra-high efficiency, the efficiency is higher than IE4 (stray loss calculated according to the recommendation of method 112B). Efficiency grade IE5 or even higher than IE5 is available upon requirements. Meanwhile, the motor's efficiency keeps high with full range speed/power

■ The electric performance and mounting dimension is complain with GB and IEC standard, it has very good interchangeability with 3 phase asynchronous motors. It's very convenience for the user to change the traditional 3 phase induction motor to more energy-saving PMSM motors.

- 机座材料：灰铸铁；
  - 永磁体：钕铁硼，最高工作温度：180 度；
  - 标准颜色：蓝绿色（RAL 5001）；
  - 额定功率：0.55kW~355kW；
  - 所有电动机均达到 GB18613-2020 标准能效等级 2 级，且能满足 IEC TS 60034-30-2：2016 标准中的 IE5 效率等级（50Hz）；
  - 标准安装结构类型（符合 IEC 60034-7 标准规定）：IM B3、B5、IM B35、B14、B34 等；
  - 所有的电动机设计防护等级为 IP55（IEC 60034-5），并可按客户要求提升防护等级（最高可达 IP68）
  - 280 及以上机座号电机标配再润滑装置，机座号 100 ~ 250 的作为选项
  - 绝缘系统按 155（F）温度等级设计，在额定输出和直接供电时按 130（B）温度等级使用；
- 
- Frame material: Cast Iron.
  - Permanent magnet: NdFeB, maximum working temperature 180°C.
  - Standard color: RAL 5001 (Blue green).
  - Rated power output: 0.55kW~355kW .
  - All motors' efficiency reaches grade 2 according to GB 18613-2020 and efficiency class IE5(50Hz) according to IEC TS 60034-30-2 :2016.
  - Optimized compact style construction.
  - Standard mounting construction according to IEC 60034-7:IM B3、B5、IM B35、B14、B34 and etc.
  - All motors are designed to IP55 degree of protection (IEC 60034-5), and higher protection degree (IP68 the highest) is available by customers request
  - Re-greasing devices for frame size 280 and above as standard, and for frame size 100 ~ 250 as option.
  - Insulation system is designed for temperature class 155 (F). At rated output with line-fed operation, the motors can be used in temperature class 130 (B).

名称 Title	IEC 标准 IEC standard	中国国家标准 Chinese standard
旋转电机 定额和性能 Rotating electrical machines – Part 1: Rating and performance	IEC 60034-1	GB/T 755
永磁同步电动机能效限定值及能效等级 Minimum allowable values of energy efficiency and energy efficiency grades for permanent magnet synchronous motors		GB 30253
三相永磁同步电机试验方法 Test procedures for three-phase permanent magnet synchronous machines		GB/T 22669
变频器供电交流感应电动机确定损耗和效率的特定试验方法 Rotating electrical machines - Part 2-3: Specific test methods for determining losses and efficiency of converter-fed AC motors	IEC TS 60034-2-3	GB/T 32877
旋转电机整体结构的防护等级（IP 代码）分级 Rotating electrical machines – Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code) - Classification	IEC 60034-5	GB/T 4942.1
旋转电机 冷却方法 Rotating electrical machines – Part 6: Methods of cooling (IC Code)	IEC 60034-6	GB/T 1993
旋转电机 结构型式、安装型式及接线盒位置的分类（IM 代码） Rotating electrical machines – Part 7: Classification of types of construction, mounting arrangements and terminal box position (IM Code)	IEC 60034-7	GB/T 997
旋转电机 线端标志与旋转方向 Rotating electrical machines – Part 8: Terminal markings and direction of rotation	IEC 60034-8	GB/T 1971
旋转电机 噪声测定方法及限值 第 3 部分：噪声限值 Rotating electrical machines – Part 9: Noise limits	IEC 60034-9	GB/T 10069.3
轴中心高为 56 mm 及以上电机的机械振动 振动的测量、评定及限值 Rotating electrical machines – Part 14: Mechanical vibration of certain machines with shaft heights 56 mm and higher – Measurement, evaluation and limits of vibration severity	IEC 60034-14	GB/T 10068
旋转电机 尺寸和输出功率等级 第 1 部分：机座号 56 ~ 400 和凸缘号 55 ~ 1080 Rotating electrical machines – Part 1: Frame numbers 56 to 400 and flange numbers 55 to 1080	IEC 60072-1	GB/T 4772.1
中小型旋转电机通用安全要求 General requirements for safety of small and medium size rotating electrical machines		GB/T 14711
电气绝缘 耐热性和表示方法 Electrical insulation – Thermal evaluation and designation	IEC 60085	GB/T 11021
电工电子产品自然环境条件 温度和湿度 Classification of environmental conditions Part 2-1: Environmental conditions appearing in nature – Temperature and humidity	IEC 60721-2-1	GB/T 4797.1
标准电压 Standard voltages	IEC 60038	GB/T 156
旋转电机 效率分级(IE 代码) 第 2 部分:变速交流电动机 Rotating electrical machines - Part 30-2: Efficiency classes of variable speed AC motors (IE-code)	IEC TS 60034-30-2	GB/T 32891.2

## 型号含义 Meaning of type code



## 铭牌信息 Nameplate

⊕ JEMEC 3-Phase Permanent Magnetic Synchronous Motor ⊕	
Driving machines for better	
Type: JPM132-1500-Z315M8 ①	S/N: JMC20201222001 ② ③
④IM: B3 ⑤Ins Cl. F ⑥IP55 ⑦AMB: -5 ~ 40°C ⑧IC411 ⑨1100kg	
Poles: 8 ⑩	BEMF: 350V⑪ L <sub>d</sub> : 0.86⑫mH L <sub>q</sub> : 1.64⑬mH
⑭V ⑮Hz ⑯kW ⑰RPM ⑱A ⑲Eff. ⑳Cosφ	
380 50 132 750 218 96.7% 0.95	
⑳ Bearing DE: 6319/C3 ㉑ Bearing NDE: 6319/C3 ㉒ Re-greas interval: 6000h ㉓ Quantity: 45g	Protection ㉔ Winding: 6*PT100 ㉕ Bearing: 2*PT100 ㉖ Heater: 160W/220V
㉗ IEC 60034-1 / GB/T 755	㉘ Date: DEC, 2020

1	产品型号	Type	16	输出功率	Output power
2	产品序列号	Series number	17	转速	Speed
3	效率等级	Efficiency class	18	额定电流	Rated current
4	安装形式	Type of construction	19	效率值	Efficiency
5	绝缘等级	Insulation class	20	功率因数	Power factor
6	防护等级	Degree of protection	21	驱动端轴承	Bearing at drive end
7	环境温度	Ambient temperature	22	非驱动端轴承	Bearing at non-drive end
8	产品重量	Weight	23	再润滑间隔时间	Re-grease time interval
9	冷却方式	Cooling method	24	再润滑注油量	Re-grease quantity
10	电机极数	Motor poles	25	绕组热敏电阻	Thermistors in winding
11	空载反电动势	No-load back electromotive force	26	轴承热敏电阻	Thermistors for bearing
12	直轴电感	Direct axis inductance	27	防潮加热带	Anti-condensation heater
13	交轴电感	Quadrature axis inductance	28	标准	Standard
14	电压	Voltage	29	生产时间	Manufacturing time
15	电机频率	Motor frequency			

## 运行环境 Working environment

防护等级 IP55 (IEC 60034-5) ;

高度不超过海拔 1000 m (IEC 60034-1) ;

允许的环境温度在 -20°C ~ 40°C (IEC 60034-1) ;

所允许的相对湿度:

-20°C ≤ T ≤ 20°C : 100 %

20 °C < T ≤ 30°C : 95 %

30 °C < T ≤ 40°C: 55 %

对于更高的环境温度、以及(或者)高于海拔 1000 m 的地点, 电动机的额定功率换算系数为  $k_{HT}$ 。所允许的功率值 ( $P_{adm}$ ) :

$$P_{adm} = P_{rated} \cdot k_{HT}$$

Degrees of motor protection IP55 (IEC 60034-5).

Altitude shall not exceed 1000m above sea-level (IEC 60034-1).

Allowed air temperature between -20°C and 40°C (IEC 60034-1).

Permitted relative humidity:

-20°C ≤ T ≤ 20°C : 100 %

20 °C < T ≤ 30°C : 95 %

30 °C < T ≤ 40°C: 55 %

For higher coolant temperatures and/or site altitudes higher than 1000m above sea level, the specified motor output must be

reduced by using the factor  $k_{HT}$ . The results in an admissible output

( $P_{adm}$ ) of the motor:  $P_{adm} = P_{rated} \cdot k_{HT}$

对于不同海拔和(或)不同环境温度的功率换算系数  $k_{HT}$

Factor  $k_{HT}$  for different site altitudes and / or coolant temperature

环境温度 Ambient temperature	对应环境温度的海拔高度 Site altitude above sea level						
	1000 m	1500 m	2000m	2500 m	3000 m	3500 m	4000 m
<30°C	1.07	1.04	1.00	0.96	0.92	0.88	0.82
30 ~ 40 °C	1.00	0.97	0.94	0.90	0.86	0.82	0.77
45 °C	0.96	0.93	0.9	0.86	0.82	0.79	0.74
50°C	0.92	0.89	0.86	0.83	0.79	0.75	0.71
55 °C	0.87	0.84	0.82	0.78	0.75	0.71	0.67
60 °C	0.82	0.79	0.77	0.74	0.70	0.67	0.63

■ 安装结构型式 Construction and mounting type

结构型式 Construction type	机座带底脚，端盖无法兰 With feet and without flange on the end-shield (DE)					
安装型式 Mounting type	I M B3 FS 80 ~ 355	I M B6 FS 80 ~ 315	I M B7 FS 80 ~ 315	I M B8 FS 80 ~ 315	I M V5 FS 80 ~ 315	I M V6 FS 80 ~ 315
示意图 Diagram						

结构型式 Construction type	机座不带底脚，端盖有法兰 Without feet and with flange on the end-shield (DE)			机座带底脚，端盖有法兰 With feet and with flange on the end-shield (DE)		
安装型式 Mounting type	I M B5 FS 80 ~ 315	I M V1 FS 80 ~ 355	I M V3 FS 80 ~ 315	I M B35 FS 80 ~ 355	I M V15 FS 80 ~ 315	I M V35 FS 80 ~ 315
示意图 Diagram						

结构型式 Construction type	机座不带底脚，端盖有标准小法兰 Without feet and with C-flange on the end-shield (DE)			机座带底脚，端盖有标准小法兰 With feet and with C-flange on the end-shield (DE)		
安装型式 Mounting type	I M B14 FS 80 ~ 160	I M V18 FS 80 ~ 160	I M V19 FS 80 ~ 160	I M B34 FS 80 ~ 160	I M V17 FS 80 ~ 160	I M V37 FS 80 ~ 160
示意图 Diagram						

■ 防护等级 Degree of protection

所有的电动机设计防护等级为 IP55 (IEC 60034-5)，并可按客户要求提升防护等级 (最高可达 IP68)

All motors are designed to IP55 degree of protection (IEC 60034-5), and higher protection degree (IP68 the highest) is available by customers' request

IP 防护代码由 IP 及后续两个数字组成，含义为 The IP code consists of IP code letters and two obligatory digits, meaning:			
第一位数字 (防止固体异物侵入) The first digit (protection from introduction of solid foreign matter)		第一位数字 (防止水侵入) The second digit (protection against penetration of water and its harmful effects)	
IP	定义 Definition	IP	定义 Definition
0	无防护 No protection	0	无防护 No protection
1	直径 ≥ 50mm Diameter ≥ 50mm	1	垂直滴水 Dropping vertically
2	直径 ≥ 12.5mm Diameter ≥ 12.5mm	2	滴水 (倾斜 15°) Dropping (up to 15°)
3	直径 ≥ 2.5mm Diameter ≥ 2.5mm	3	防洒水 Sprayed
4	直径 ≥ 1.0mm Diameter ≥ 1.0mm	4	防飞溅 Splashed
5	有限防尘 Limited protection against dust	5	防喷射 In stream
6	完全防尘 Dust tight	6	防强力喷射 In strong steam
		7	水下短时浸没 Under short-time immersion
		8	水下长时间浸没 Under permanent immersion

■ 轴承系统 Bearing system

JPM 系列电动机标准配置深沟球轴承或角接触球轴承，这些轴承是密封的或可再润滑型的。

机座号 80 ~ 160 范围内电动机驱动端与非驱动端轴承浮动；

机座号 180 ~ 355 电动机驱动端轴承浮动，非驱动端轴承固定；

机座号 80 ~ 132 范围电动机标配不带再润滑装置；机座号 160 以上的电动机标配可再润滑轴承，并标配再润滑装置。如果需要，FS100 ~ 250 范围的电动机也可选用可再润滑轴承和再润滑装置。

JPM series motors are supplied with the ball bearing as standard. These bearings are either of the sealed or re-greaseable type.

For FS80 ~ 160, the floating bearings are assembled;

for FS180 ~ 355, floating bearing at DE, and fixed bearing at NDE assembled.

As standard, Frame size 80 ~ 132 motors are not with regreasing device, but 160 and above motors with regreasing bearing and regreasing device. If necessary, frame size 100 ~ 250 motor can be configured with regreasing bearing and regreasing.

## ■ 轴承配置表 Bearing size

机座号 Frame size	轴伸端 Driving end		非轴伸端 Non-driving end	
	3000 rpm	≤1500 rpm	3000 rpm	≤1500 rpm
80	6204 ZZ/C3	6204 ZZ/C3	6204 ZZ/C3	6204 ZZ/C3
90	6205ZZ/C3	6205ZZ/C3	6205ZZ/C3	6205ZZ/C3
100	6206ZZ/C3	6206ZZ/C3	6206ZZ/C3	6206ZZ/C3
112	6306ZZ/C3	6306ZZ/C3	6306ZZ/C3	6306ZZ/C3
132	6308ZZ/C3	6308ZZ/C3	6308ZZ/C3	6308ZZ/C3
160	6309C3	6309C3	6309C3	6309C3
180	6311C3	6311C3	6311C3	6311C3
200	6312C3	6312C3	6312C3	6312C3
225	6313C3	6313C3	6313C3	6313C3
250	6314C3	6314C3	6314C3	6314C3
280	6314C3	6317C3	6314C3	6317C3
315	6317C3	6319C3	6317C3	6319C3
355	6319C3	6322C3	6319C3	6322C3

## ■ 轴承寿命（标称寿命） Bearing lifetime (nominal lifetime)

通常，轴承的使用寿命取决于轴承规格、轴承载荷、运行条件、转速以及润滑脂寿命。

JPM 系列电机轴承的标称额定寿命是根据 ISO 281 标准规定的标准计算程序计算出来的。如果电动机在该样本中所规定条件下运行，90% 甚至更高比例的轴承的运行时间可达到标称寿命。

当电动机水平安装，且不受轴向力的情况下，电动机的轴承寿命至少能够达到 40,000 小时。在承受最大容许载荷的情况下，其寿命也至少有 20,000 小时。这里所说的轴承寿命，指的都是电动机在 50 Hz 下正常运行的情况。

当电动机在非正常的条件下运行时，轴承的寿命会缩短。如下面几种情况：

- 当电动机的运行速度高于额定速度时，由于电动机的振动增大，使得轴承受到额外的径向力和轴向力，导致其寿命减少；
- 当环境或设备等因素引起电动机振动加大时，同样轴承也会因此受到额外的径向力和轴向力，而导致其寿命减少；
- 当环境温度每升高 10℃，润滑脂寿命以及再润滑时间缩短一半。

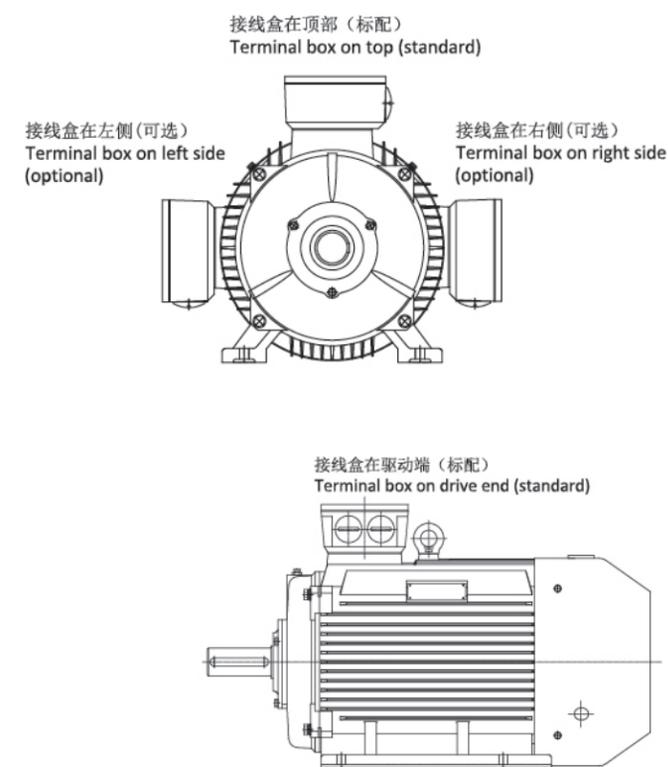
Generally, the bearing lifetime is defined by the bearing size, the bearing load, the operating condition, the speed and the grease lifetime. The nominal bearing lifetime of JPM series motor is defined according standardized calculation procedures (ISO 281) and is reached or even exceeded for 90% of the bearings when the motors are operated in compliance with the data provide in the catalog.

The bearing lifetime of motors with horizontal type of construction is at least 40,000 hours if there is no additional axial loading at the coupling output and at least 20,000 hours with the maximum admissible loads. This assumes that the motor is operated at 50Hz.

When the motor runs outside of normal conditions, the bearing life will be reduced, such as the following conditions.

- When motor runs beyond the rated speed, the increase of motor vibration will result in the extra radial and axial force on bearing. This will reduce the life of bearing;
- When the motor vibration increase due to the environment or other equipment, the bearing also will endure more radial and axial force. This also will reduce the life of bearing;
- If the coolant temperature is increased by 10℃, the grease lifetime and regreasing interval is halved.

## ■ 接线盒位置 Location of the terminal box



JPM 系列电机主接线盒在轴伸端顶部（标准位置），也可以处于机侧或右侧。

The terminal box position of JPM series motor is on the top of house, drive end (standard position). It can also be located on right or left side of the motor house.

如果电机在安装时接线盒与其它零部件干涉，接线盒可以移到非轴伸端。

If there is interfere between the terminal box and other components, the terminal box can be moved from the drive end (DE) to non-drive end (NDE)

接线盒是可以 90 度旋转的，这样可以方便调整进线孔的方向指向左、右、驱动端或非驱动端。

The terminal box can be rotated by 90°, so it is easy to adjust the cable entry to left, right, drive end or non-drive end.

## ■ 冷却与通风 Cooling and ventilation

JPM 系列电动机标配装有径向（离心）式冷却风扇，可双向旋转，冷却方式为 IEC60034-6 标准的 IC411。为减少电机风扇噪音，可选配后倾式风扇。但此时电机只能按规定的方向旋转。

对于某些应用，可以考虑配置独立驱动风扇，如：

- 电动机在低速运行时，推荐使用独立驱动风扇，从而使电动机得到有效冷却；
  - 电动机在明显高于额定同步转速的速度运行时，同样推荐选用独立驱动风扇，这样有助于降低电动机噪音。
- 另外，对于某些风机类的应用，可选择不安装冷却风扇，而由外部循环空气冷却，此时电机的冷却方式为 IC418

The JPM standard motors are fitted with a radial flow fan, the fan is bi-directional rotation, the cooling method is IC411 in accordance with IEC 60034-6.

Backward curved fan is optional to reduce the ventilation noise. In this case the motor could rotate in only one direction.

For some special application, separately driven fan should be considered to be configured.

- The use of a separately driven fan is recommended to increase motor utilization at low speed;
- When motor speed significantly higher than the synchronous speed, the separately fan is also recommended to be used. It can help reduce the motor noise.

For some application like fan, the motor without fan is optional. In this case the motor must be cooled by the air overflowed its surface, the cooling method is IC418.

### ■ 额定输出 Rated output

JPM 系列电机的额定输出功率是指电机在额定电压及频率下，环境温度-20℃~40℃，海拔高度不超过 1000m，连续运行的情况下（S1 工作制）时的输出功率。

The rated output power of JPM series motors means that the motor runs under continuous duty S1 (IEC 60034 - 1) operation when operated at ambient temperature from -20℃ to 40℃ and at altitudes of up to 1000m over sea.

### ■ 电气数据公差 Tolerance for electrical data

项目 No.	参量 Quantity	容差 Tolerance
1	效率 Efficiency $\eta$	
	$P_{rated} \leq 150kW$	-15% of (1- $\eta$ )
	$P_{rated} > 150kW$	-10% of (1- $\eta$ )
2	功率因数	-1/6 (1-cos $\phi$ )
	Power factor	最小绝对值 Minimum absolute value: 0.02
		最大绝对值 Maximum absolute value: 0.07

### ■ 过载倍数 Overload times

按 IEC60034-1 要求，JPM 系列电机可以在额定电压下，承受 1.5 倍额定电流达 2 分钟。

According to IEC60034-1, JPM series motors are designed to withstand overload capacity of 1.5 times rated current for 2 minutes at rated voltage and frequency.

### ■ 绝缘系统 Insulation system

标准 JPM 系列电机采用 F 级绝缘（155℃）系统，电动机的设计温升为 B 级（80K）。如电机使用环境温度较高，或存在影响电机散热的因素，电机也可采用 H 级绝缘，以增加电机的可靠性。

JPM series motors are designed for insulation class F (155℃) with temperature rise class B (80K). If the motor works at high ambient temperature, or there's factors affect the motor cooling, insulation class H is optional to increase the motor's reliability.

### ■ 电动机的驱动 Driving of motor

因为设计原因，永磁同步电机必须由变频器驱动。捷美达推荐使用捷美达品牌变频器（见 P 21）

Because of the design, a variable frequency driver is necessary to drive the PMSM. JEMEC recommend using JEMEC variable frequency driver (please refer to P 21).

### ■ 绕组保护 Winding protection

当电动机运行时遇到过载、过压或欠压、短路、缺相等故障时，电动机绕组温度有可能超过设计的绝缘系统可承受的最大温度，导致电动机损坏。将温度传感器或温度检测器嵌入电动机定子绕组中，就可以及时监测电动机绕组温度，从而使其不会因为过热受到破坏。

When motors encounter failures such as overload, over/under voltage, shortage, phase loss etc, the motor's winding temperature may exceed its insulation maximum withstand temperature, cause the motor damage. To use of thermal protectors and thermal detectors incorporated into the stator windings in order to protect them against serious damage due to thermal overloads.

### ■ PTC 热敏电阻温度保护 PTC thermistors protection

PTC 热敏电阻是一种典型具有温度敏感性的半导体电阻，超过一定的温度（居里温度）时，它的电阻值随着温度的升高呈阶跃性的增高。当达到 PTC 的极限温度时（标称跳闸温度），PTC 热敏电阻阻值会出现一个阶跃变化。这一变化被跳闸装置捕捉后，即可断开辅助回路。

- 电动机绕组带一组三芯串联的 PTC 热敏电阻用于跳闸，温度可以选择，对于 F 级绝缘的 JPM 系列电机，标配为 150 度。
- 电动机绕组带两组三芯串联的 PTC 热敏电阻，其中一组用于在电动机跳闸前报警，一组用于跳闸。对于 F 级绝缘的 JPM 系列电机，报警温度为 140℃，跳闸温度为 150℃

A PTC thermistors is a typical thermally sensitive semi-conductor resistors, when exceeds the certain temperature (Curie temperature), the resistance increase significant with temperature. When a limit temperature is reached (nominal tripping temperature), the resistance of PTC thermistors will have a step change. This is evaluated by a tripping unit and can be used to open auxiliary circuits.

- Motor winding is protected with PTC thermistors with 3 embedded temperature sensors for tripping, the tripping temperature is optional. For JPM series motor with class F insulation, the tripping temperature is 150℃
- Motor winding is protected with two sets of three temperature sensors, one set is for warning, another set for tripping. For JPM series motor with class F insulation, the warning temperature is 140℃, and tripping temperature is 150℃.

### ■ PT100 铂热电阻传感器温度保护 PT100 resistance thermometers protection

PT100 铂热电阻是一种精确高、灵敏度高的温度传感器，其线性温度阻值优于其他电阻式传感器，性能稳定、可靠性高。JPM 系列电机 280 及以上机座绕组中可选配 PT100 温度传感器，通常每相绕组安装两只 PT100，三相绕组共 6 只，其中三只工作，三只备用。

PT100 platinum thermometers are a high precision, high sensitivity, better linear temperature resistance, more stable performance, and high reliability sensor. For JPM series motors whose frame size above 280, PT100s are optional. Normally each phase winding equips 2 PT100, 6 PT100s for 3 phase windings of which 3 for operation, 3 for spare.

### ■ 轴承保护 Bearing protection

轴承过热是轴承出现严重问题前的一个重要指示。因此，对轴承温度进行监控，是保证电机安全运行的一个重要措施。轴承温度监测是通过在电动机驱动端和非驱动端的轴承端盖拧入 PT100 铂热电阻温度传感器来进行的。温度传感器的引线引入电动机主接线盒内。JPM 系列 280 及以上机座号电机可选配。

Overheating is a major indicator of an underlying problem affecting a bearing, so it is an important measure to keep the motor running safe by monitoring the bearings' temperature. The temperature is monitored through PT100 resistance thermometers screwed into the bearing plates of motor driven end (DE) and non-drive-end (NDE). The wires are routed through the main connection box. It is optional for JPM series frame size 280 and above motors.

### ■ 防潮加热保护 Anti-condensation heater

当电动机处于较为恶劣的环境时，比如湿度非常大或者昼夜温差比较大，电动机的绕组很可能出现凝露的现象，这样会带来电动机烧毁的风险。对于这种情况，建议对电动机绕组配置防潮加热带进行保护。

电动机防潮加热带必须在电动机工作过程中处于不工作状态；当电动机停机时，防潮加热带必须启动工作，为绕组加热。JPM 系列所有电机均可选配防潮加热带。

Motors whose windings are at risk of condensation due to the climatic conditions, e.g. inactive motors in humid atmospheres or motors that are subjected to widely fluctuating temperatures can be equipped with anti-condensation heaters.

Anti-condensation heaters must be switched off during operation. When motor shut down, the heaters must be switched on. Anti-condensation heater is optional for all JPM series electric motors.

■ 额定转速 3000rpm Rated speed 3000rpm

型号 Type	额定功率 Rated power (KW)	额定电压 Rated voltage (V)	额定电流 Rated current (A)	额定转速 Rated speed (r/min)	效率 Efficiency (%)	功率因数 Power factor cosφ	额定频率 Rated frequency (Hz)	服务系数 Service factor	重量 Weight (kg)
JPM0.75-3000-Z80S6	0.55	380	1.01	3000	87.3	0.95	150	1.0	15
JPM0.75-3000-Z80S6	0.75		1.35		88.6				16
JPM1.1-3000-Z80M6	1.1		1.96		89.8				17
JPM1.5-3000-Z90S6	1.5		2.64		90.9				20
JPM2.2-3000-Z90L6	2.2		3.83		91.8				22
JPM3-3000-Z100L6	3		5.18		92.6				31
JPM4-3000-Z100L6	4		6.86		93.3				33
JPM5.5-3000-Z112M6	5.5		9.36		94.0				43
JPM7.5-3000-Z112M6	7.5		12.7		94.5				48
JPM11-3000-Z132S6	11		18.5		95.0				65
JPM15-3000-Z132M6	15		25.2		95.3				76
JPM18.5-3000-Z132M6	18.5		30.9		95.6				83
JPM22-3000-Z160M6	22		36.7		95.9				117
JPM30-3000-Z160L6	30		49.9		96.1				139
JPM37-3000-Z180M8	37		61.4		96.3				164
JPM45-3000-Z180L8	45		74.7		96.4				187
JPM55-3000-Z200L8	55		91.1		96.5				226
JPM75-3000-Z200L8	75		124		96.6				249
JPM90-3000-Z225S8	90		149		96.7				308
JPM110-3000-Z250M8	110		182		96.7				411
JPM132-3000-Z280S8	132	218	96.7	573					
JPM160-3000-Z280M8	160	264	96.7	639					
JPM185-3000-Z315S8	185	306	96.7	904					
JPM200-3000-Z315M8	200	331	96.8	942					
JPM220-3000-Z315L8	220	364	96.8	983					
JPM250-3000-Z315L8	250	413	96.9	1024					
JPM280-3000-Z315L8	280	463	96.9	1107					
JPM315-3000-Z315L8	315	519	97.0	1173					
JPM132-3000-Z280S8	132	218	96.7	573	200	1.0	100	759	
JPM160-1500-Z280M8	160	264	96.7	639				759	
JPM185-1500-Z315S8	185	306	96.7	904				1002	
JPM200-1500-Z315M8	200	331	96.8	942				1100	
JPM220-1500-Z315L8	220	364	96.8	983				1133	
JPM250-1500-Z315L8	250	413	96.9	1024				1265	
JPM280-1500-Z355M12	280	461	97.3	1602				1602	
JPM315-1500-Z355L12	315	517	97.3	1687				1687	
JPM355-1500-Z355L12	355	583	97.3	1815				1815	

■ 额定转速 1500rpm Rated speed 1500rpm

型号 Type	额定功率 Rated power (KW)	额定电压 Rated voltage (V)	额定电流 Rated current (A)	额定转速 Rated speed (r/min)	效率 Efficiency (%)	功率因数 Power factor cosφ	额定频率 Rated frequency (Hz)	服务系数 Service factor	重量 Weight (kg)
JPM0.55-1500-Z80S6	0.55	380	1.03	1500	85.6	0.95	75	1.0	17
JPM0.75-1500-Z80M6	0.75		1.40		85.6				18
JPM1.1-1500-Z80M6	1.1		2.01		87.4				19
JPM1.5-1500-Z90S6	1.5		2.72		88.1				23
JPM2.2-1500-Z90L6	2.2		3.92		89.7				26
JPM3-1500-Z100L6	3		5.31		90.3				37
JPM4-1500-Z112M6	4		7.04		90.9				48
JPM5.5-1500-Z112M6	5.5		9.55		92.1				53
JPM7.5-1500-Z132S6	7.5		13.0		92.6				64
JPM11-1500-Z132M6	11		18.8		93.6				87
JPM15-1500-Z160M6	15		25.5		94.0				108
JPM18.5-1500-Z160M6	18.5		31.4		94.3				141
JPM22-1500-Z180M8	22		37.2		94.7		154		
JPM30-1500-Z180L8	30		50.5		95.0		179		
JPM37-1500-Z200L8	37		62.1		95.3		217		
JPM45-1500-Z200L8	45		75.3		95.6		225		
JPM55-1500-Z225S8	55		91.8		95.8		282		
JPM75-1500-Z225M8	75		125		96.0		320		
JPM90-1500-Z250M8	90		150		96.2		427		
JPM110-1500-Z250M8	110		182		96.4		480		
JPM132-1500-Z280S8	132	219	96.6	686					
JPM160-1500-Z280M8	160	264	96.8	759					
JPM185-1500-Z315S8	185	305	97.0	1002					
JPM200-1500-Z315M8	200	330	97.0	1100					
JPM220-1500-Z315L8	220	363	97.0	1133					
JPM250-1500-Z315L8	250	411	97.2	1265					
JPM280-1500-Z355M12	280	461	97.3	1602					
JPM315-1500-Z355L12	315	517	97.3	1687					
JPM355-1500-Z355L12	355	583	97.3	1815					

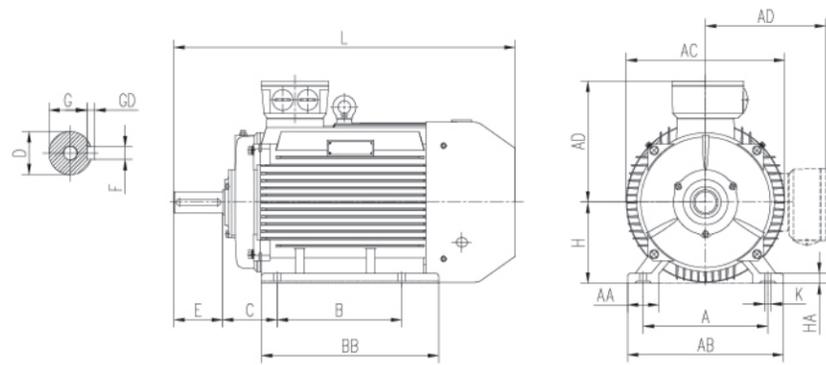
■ 额定转速 1000rpm Rated speed 1000rpm

型号 Type	额定功率 Rated power (KW)	额定电压 Rated voltage (V)	额定电流 Rated current (A)	额定转速 Rated speed (r/min)	效率 Efficiency (%)	功率因数 Power factor cosφ	额定频率 Rated frequency (Hz)	服务系数 Service factor	重量 Weight (kg)
JPM0.55-1000-Z80M6	0.55	380	1.02	1000	85.9	0.95	50	1.0	18
JPM0.75-1000-Z80M6	0.75		1.37		87.4				19
JPM1.1-1000-Z90S6	1.1		1.98		88.7				24
JPM1.5-1000-Z90L6	1.5		2.67		89.9				26
JPM2.2-1000-Z100L6	2.2		3.87		90.9				37
JPM3-1000-Z112 M 6	3.0		5.23		91.8				49
JPM4-1000-Z112 M 6	4.0		6.90		92.7				53
JPM5.5-1000-Z132S6	5.5		9.42		93.4				72
JPM7.5-1000-Z132M6	7.5		12.8		94.0				83
JPM11-1000-Z160M6	11		18.6		94.5				127
JPM15-1000-Z160M6	15		25.3		94.9				151
JPM18.5-1000-Z180M8	18.5		31.0		95.3				182
JPM22-1000-Z180M8	22		36.8		95.6				205
JPM30-1000-Z200L8	30		50.1		95.8				246
JPM37-1000-Z225S8	37		61.6		96.0				324
JPM45-1000-Z225S8	45		74.8		96.2		355		
JPM55-1000-Z250M8	55		91.3		96.3		402		
JPM75-1000-Z250M8	75		124		96.4		489		
JPM90-1000-Z280M8	90		149		96.5		606		
JPM110-1000-Z280M8	110		182		96.7		930		
JPM132-1000-Z315M8	132		218		96.9		1100		
JPM160-1000-Z315L8	160		264		97.0		1199		
JPM185-1000-Z315L8	185		305		97.0		1282		
JPM200-1000-Z355M12	200		330		97.0		1471		
JPM220-1000-Z355L12	220		363		97.0		1520		
JPM250-1000-Z355L12	250		412		97.0		1772		
JPM280-1000-Z355M12	280		462		97.0		1921		
JPM315-1000-Z355L12	315		519		97.0		2049		

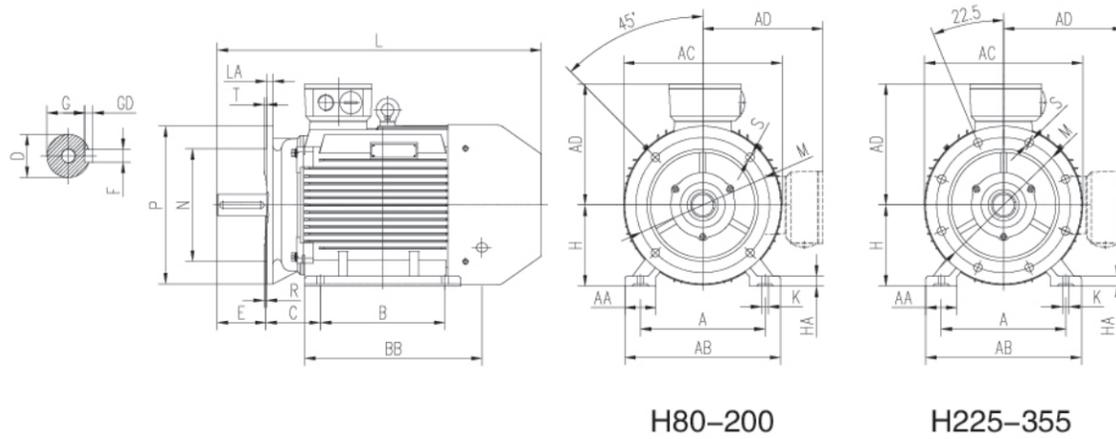
■ 额定转速 750rpm Rated speed 750rpm

型号 Type	额定功率 Rated power (KW)	额定电压 Rated voltage (V)	额定电流 Rated current (A)	额定转速 Rated speed (r/min)	效率 Efficiency (%)	功率因数 Power factor cosφ	额定频率 Rated frequency (Hz)	服务系数 Service factor	重量 Weight (kg)
JPM0.55-750-Z80M6	0.55	380	1.05	750	83.9	0.95	37.5	1.0	20
JPM0.75-750-Z80M6	0.75		1.41		84.9				21
JPM1.1-750-Z90S6	1.1		2.05		86.0				26
JPM2.2-750-Z100L6	1.5		2.75		87.2				37
JPM3-750-Z112 M 6	2.2		3.99		88.1				50
JPM3-750-Z132S6	3		5.39		89.0				65
JPM4-750-Z132S6	4		7.09		90.2				76
JPM5.5-750-Z160M6	5.5		9.68		90.9				114
JPM7.5-750-Z160M6	7.5		13.1		91.5				116
JPM11-750-Z180M8	11		19.0		92.7				154
JPM15-750-Z180M8	15		25.7		93.3				179
JPM18.5-750-Z200L8	18.5		31.5		94.0				217
JPM22-750-Z200L8	22		37.2		94.5				225
JPM30-750-Z225M8	30		50.7		94.7				295
JPM37-750-Z225M8	37		62.3		95.0				355
JPM45-750-Z250M8	45		75.6		95.2		410		
JPM55-750-Z250M8	55		92.2		95.4		480		
JPM75-750-Z280M8	75		125		95.6		651		
JPM90-750-Z280M8	90		151		95.6		875		
JPM110-750-Z315S8	110		182		96.6		1133		
JPM132-750-Z315M8	132		218		96.7		1265		
JPM160-750-Z355L12	160		264		96.8		1166		
JPM185-750-Z355L12	185		305		97.9		1587		
JPM200-750-Z355M12	200		330		97.0		1836		
JPM220-750-Z355L12	220		363		97.0		1921		
JPM250-750-Z355L12	250		412		97.0		2049		

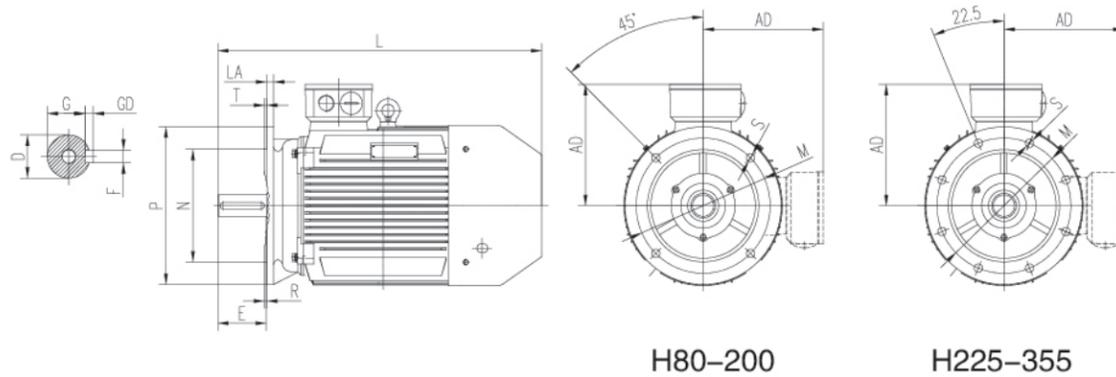
■ B3 安装型式 尺寸 Dimensions for B3 mounting



■ B35 安装型式 尺寸 Dimensions for B35 mounting



■ B5 安装型式 尺寸 Dimensions for B35 mounting



机座号 Frame size	通用尺寸 (轴伸) Universal Dimensions (shaft extension)										B35/B5/V1 尺寸 B35/B5/V1 Dimensions							
	D		E		F		G		GD		N	M	P	S	T	R	LA	HF
	3000	Other	3000	Other	3000	Other	3000	Other	3000	Other								
80	19		40		6		15.5		6									
90S	24		50				20			130	165	200	12	3.5			12	
9L					8				7									
100L	28		60				24			180	215	250	14.5	4			13	
112M																	14	---
132S	38k6		80		10		33			230j6	265	300	14.5	4			14	
132M									8									
160M	42k6				12		37											
160L										250j6	300	350					15	
180M	48k6		110		14		42.5		9									500
180L																		
200L	55m6				16		49		10	300j6	350	400	19	5	0		17	550
225S	---	60m6	--	140	--	18	--	53	--									
225M	55m6		110		16		49		10	350j6	400	450					20	610
250M	60m6	65m6			18		53	58	11									650
280S										450j6	500	550					22	
280M		75m6		140		20		67.5										720
315S	65m6				18		58		11									
315M		80m6			22		71			550j6	600	660					25	860
315L			140	170									24	6				
355M	75m6	95m6			20	25	67.5	86	12	680j6	740	800					30	980
355L																		

机座号 Frame size	B3/B35 尺寸 B3/B35 Dimensions										通用尺寸 Universal Dimensions			
	A	AA	AB	B	BB	HA	HD	H	K	C	AC	AD	L	
													3000rpm	Other
80	125		165	100	135	10	220	80		50	165	145	295	
90S	140	37	180	100	140	12	250	90	10	56	195	155	315	
9L				125	165								340	
100L	160	42	205	140	185	14	270	100	12	63	215	180	385	
112M	190	52	230			15	300	112		70	240	190	400	
132S	216	63	270	178	266	20	345	132	15	89	275	213	508	
132M													546	
160M	254	73	320	210	318	20	420	160	15	108	330	260	659	
160L				254	362								714	
180M	279	73	355	241	349	22	455	180	19	121	380	280	738	
180L				279	387								778	
200L	318		395	305	375	25	505	200	19	133	400	305	770	
225S	356	83	435	286	375	28	560	225					--	820
225M				311	400				815	845				
250M	406	88	490	349	450	30	615	250	24	168	510	370	910	
280S	457	93	550	368	490	35	680	280					190	547
280M				1035										
315S	508	120	635	406	575	45	845	315	28	216	645	530	1185	1215
315M				457	685								1295	1325
315L				508										
355M	610	120	730	560	750	52	1010	355	28	254	710	655	1500	1530
355L				630										



ES500 系列变频器是一款面向永磁同步电机控制的高性能矢量控制变频器，支持无编码器矢量控制及闭环矢量控制。产品可靠性高，简单易用，功能丰富，支持多种编码器类型及通信接口，亦支持感应电机的驱动。

ES500 series variable frequency driver is a kind of high-performance vector control variable frequency driver, supports encoder-free vector control and close-loop vector control, high-reliability, easy operation, multi-functional, supports various kind encoder and communication interface, it supports to drive induction motor as well.

ES 500 系列 ES 500 series					
驱动器型号 Driver type	电源容量 Power capacity (k VA)	输入电流 Input current (A)	输出电流 Output current (A)	适配电机 Motor power	
				k W	HP
单相电源 Single phase: 220V(-15%~+20%) 50/60Hz					
ES500-2S 0.4GB	1	5.4	2.3	0.4	0.75
ES500-2S 0.75GB	1.5	8.2	4	0.75	1
ES500-2S 1.5GB	3	14	7	1.5	2
ES500-2S 2.2GB	4	23	9.6	2.2	3
三相电源 Three phase: 220V(-15%~+20%)50/60Hz					
ES500-2T 0.4GB	1.5	3.4	2.1	0.4	0.5
ES500-2T 0.75GB	3	5	3.8	0.75	1
ES500-2T 1.5GB	4.5	7.8	6.8	1.5	2
ES500-2T 2.2GB	5.9	10.5	9	2.2	3
ES500-2T 3.7GB	8.9	14.6	13	3.7	5
ES500-2T 5.5GB	17	26	25	5.5	7.5
ES500-2T 7.5GB	21	35	32	7.5	10
ES500-2T 11GB	30	46.5	45	11	15
ES500-2T 15G	40	62	60	15	20
ES500-2T 18.5G	57	76	75	18.5	25
ES500-2T 22G	69	92	91	22	30
ES500-2T 30G	85	113	112	30	40
ES500-2T 37G	114	157	150	37	50
ES500-2T 45G	134	180	176	45	60
ES500-2T 55G	160	214	210	55	75
ES500-2T 75G	231	307	304	75	100
三相电源 Three phase: 380V(-15%~+20%)50/60Hz					
ES500-4T 0.4GB	1	2.4	1.2	0.4	0.75
ES500-4T 0.75GB	1.5	3.4	2.1	0.75	1
ES500-4T 1.5GB	3	5	3.8	1.5	2
ES500-4T 2.2GB	4	5.8	5.1	2.2	3
ES500-4T 3.7GB	5.9	10.5	9	3.7	5
ES500-4T 5.5GB	8.9	14.6	13	5.5	7.5
ES500-4T 5.5PB					
ES500-4T 7.5GB ES500-4T 7.5PB	11	20.5	17	7.5	10
ES500-4T 11GB ES500-4T 11PB	17	26	25	11	15

ES500-4T 15GB ES500-4T 15PB	21	35	32	15	20
ES500-4T 18.5GB ES500-4T 18.5PB	24	38.5	37	18.5	25
ES500-4T 22GB ES500-4T 22PB	30	46.5	45	22	30
ES500-4T 30G ES500-4T 30PB	40	62.5	60	30	40
ES500-4T 37G ES500-4T 37P	57	76	75	37	50
ES500-4T 45G ES500-4T 45P	69	92	91	45	60
ES500-4T 55G ES500-4T 55P	85	113	112	55	75
ES500-4T 75G ES500-4T 75P	114	157	150	75	100
ES500-4T 90G ES500-4T 90P	134	180	176	90	125
ES500-4T 110G ES500-4T 110P	160	214	210	110	150
ES500-4T 132G ES500-4T 132P	192	256	253	132	200
ES500-4T 160G ES500-4T 160P	231	307	304	160	250
ES500-4T 185G ES500-4T 185P	242	350	340	185	275
ES500-4T 200G ES500 4T 200P	250	385	377	200	300
ES500-4T 220G ES500 4T 220P	280	430	426	220	300
ES500-4T 250G ES500 4T 250P	355	468	465	250	400
ES500-4T 280G ES500 4T 280P	396	525	520	280	370
ES500-4T 315G ES500 4T 315P	445	590	585	315	500
ES500-4T 350G ES500 4T 350P	500	665	650	350	420
ES500-4T 400G ES500 4T 400P	565	785	725	400	530

ES500 系列钣金架构外形及安装尺寸

Outline and mounting dimension of ES500 metal plate series

产品功率等级 Product power	外形尺寸 Outline (mm)			安装尺寸 Mounting dimension (mm)			安装孔径 Install hole diameter (mm)
	W	H	D	W1	H1	W11	
	15kW-18.5kW	217	335	184	140	324	
22kW	228	361	203.5	139	349	N/A	Φ6
30kW-37kW	285	463	224	235	447	N/A	Φ6
45kW-75kW	305	613	294	200	592	N/A	Φ10
90kW-132kW	400	753	293	280	731.5	N/A	Φ10
160kW-220kW	520	865	343	380	836.5	190	Φ12
250kW-355kW	800	1172	412	600	1143	300	Φ14

ES500 系列钣金架构外形及安装尺寸

Outline and mounting dimension of ES500 plastic house series

产品功率等级 Product power	产品功率等级 Product power			产品功率等级 Product power		产品功率等级 Product power
	W	H	D	W1	H1	
0~3.7kW	118	185	156.7	106.6	175.3	Φ4
5.5kW~11kW	160	247	178.1	148	235	Φ5

