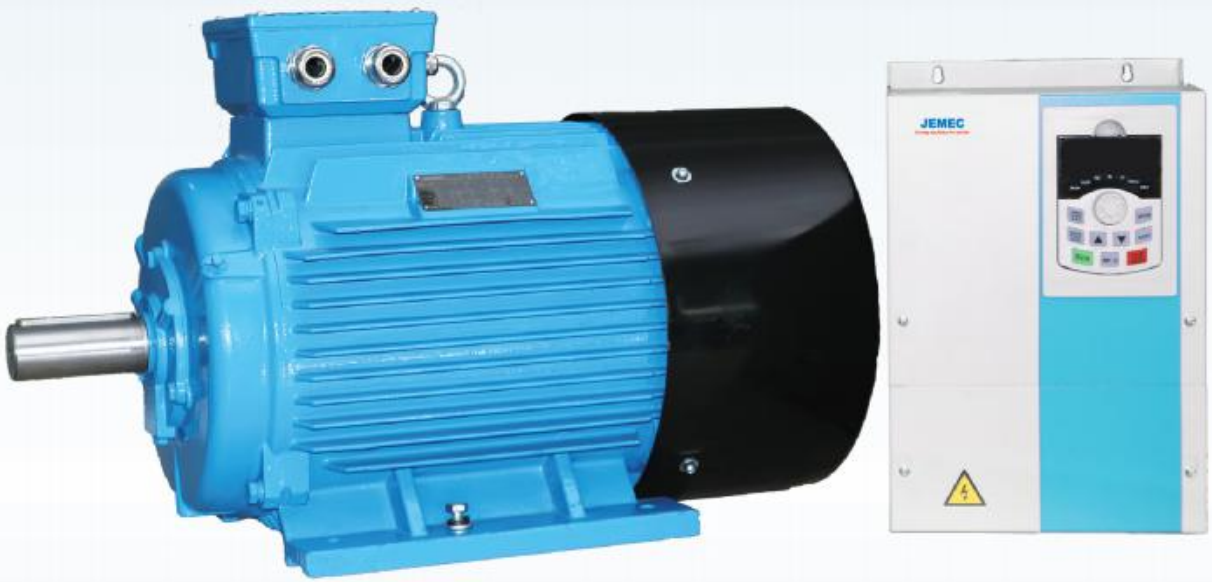
JEMEC

Driving machines for better




# JEM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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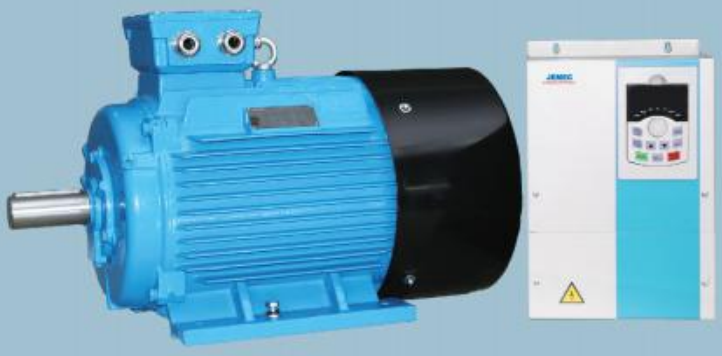


## 概 述 Introduction

永磁同步电机（PMSM）是一种旋转交流同步电机，和普通旋转电机一样，包含定子和转子，其中转子中包含永磁体。转子中永磁体产生恒定的磁场，与定子中绕组通过交流电后产生的旋转磁场相作用，产生扭矩，推动转子与定子磁场同步旋转。

JPM 系列超高效稀土永磁同步电机采用转子内插磁钢结构，不仅效率高，而且具有结构简单、运行可靠，体积小、重量轻，安装互换性好的优点。

JPM 系列超高效稀土永磁同步电机由变频器采用无编码器矢量控制运行，在 25%-120%负载范围内，相对于同规格异步电动机均具有更高的效率，更宽的经济运行范围，电机温升低，具有显著的节能效果。

Permanent magnet synchronous motor (PMSM) is a kind of rotary AC synchronous motor, like any rotating electric motor, consists of a rotor and a wound stator. The rotor consists of permanent magnets. Permanent magnets located on the rotor create a constant magnetic field. The magnetic field of the rotor, interacting with the synchronous alternating current of the stator windings, creates torque, forcing the rotor to rotate at a synchronous speed with the stator field.

JPM series Ultra High Efficiency Rare-earth Permanent Magnet Synchronous Motor adopts interior permanent magnet rotor, not only has ultra-high efficiency, but also has features such as simple structure, reliable, small size, low weight and good interchangeability etc.

JPM series Ultra High Efficiency Rare-earth Permanent Magnet Synchronous Motor is driven by frequency inverter through encoder-free vector control. Within the range of 25%-125% load, compare with same size asynchronous motor, it has higher efficiency, wider economic range, lower temperature rise and significant energy-saving.

## 主要特点 Main features

■ 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 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 PMSM motor's size can 70% be smaller, 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.

## 基本配置 Basic configuration

- 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 60034-30 2014 标准中的 IE4 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；
- 电动机标准冷却方式为自扇冷却（IEC 60034-6 规定的 IC 411），可提供独立驱动风扇强制冷却；

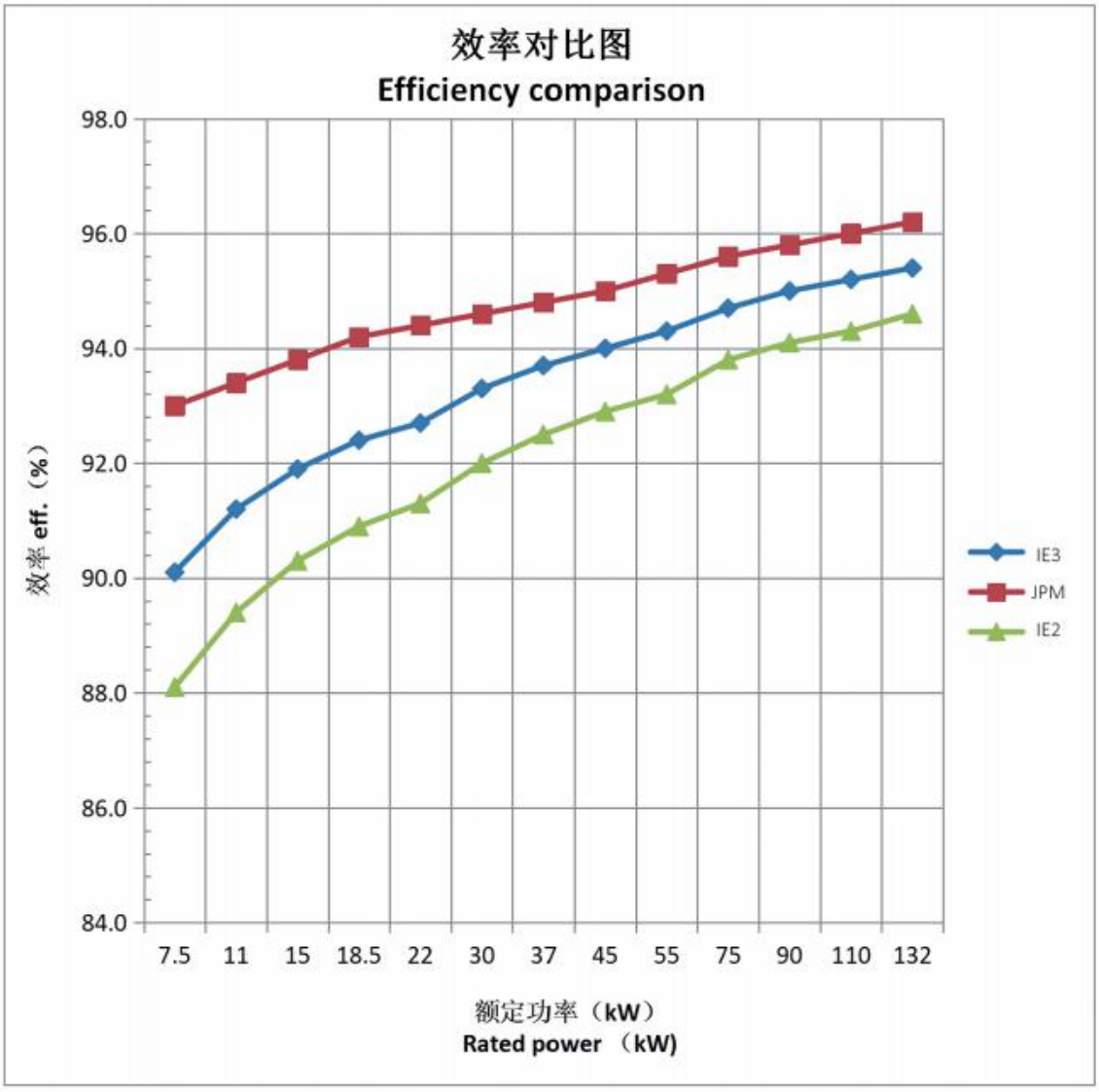
- Frame material: Cast Iron
- Permanent magnet: NdFeP, maximum working temperature 180℃
- Standard color: RAL 5001 (Blue green)
- Rated power output: 0.55kW~355kW .
- All motors' efficiency reaches grade 2 according to GB18613-2020 and efficiency class IE4 (50Hz) according to IEC 60034-30 2014
- Optimized 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).
- Self ventilated motors with radial-flow fans (cooling method IC 411 according to IEC 60034-6) as standard, forced air cool with external separately driven fans as option.

## 与普通三相异步电动机主要效率对比

Efficiency Comparison with Three Phase Asynchronous Motor

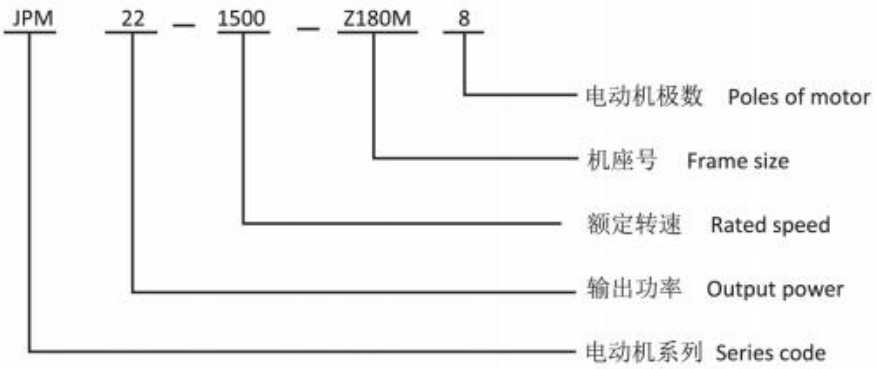
与三相异步电动机相比，永磁同步电机的转子由永磁体组成，不需要转子绕组及从电网中吸收无功电流激磁，大大减小了转子铁耗与铜耗，因此，同规格的永磁同步电机效率大大高于异步电机。

Compare with 3 phase asynchronous motors, the PMSM's rotor is consist of permanent magnet, it don't need rotor winding nor to absorb reactive current to excite, thus greatly reduce the rotor copper loss and iron loss, so the same size PMSM has more higher efficiency than 3 phase asynchronous motors.

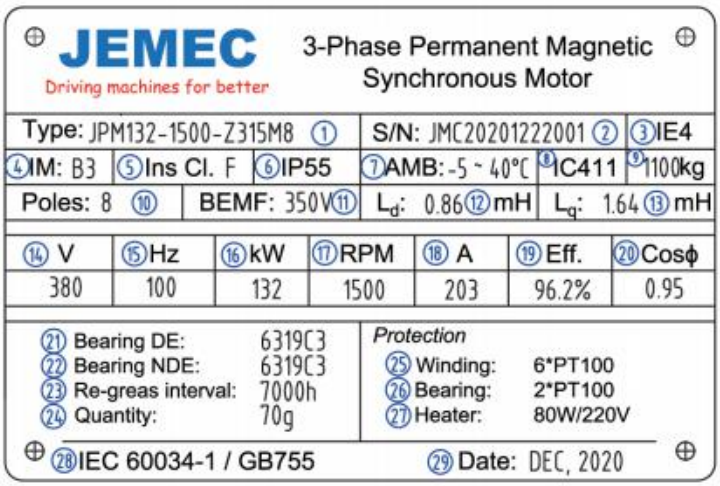


| 名 称<br>Title | IEC 标 准<br>IEC standard | 中国国家标准<br>Chinese standard |
|---|---|---|
| 旋转电动机定额和性能<br>Rotating electrical machines – Part 1: Rating and performance | IEC 60034-1 | GB 755 |
| 永磁同步电动机能效限定值及能效等级<br>Minimum allowable values of energy efficiency and energy efficiency grades for permanent magnet synchronous motors | | GB 30253 |
| 三相永磁同步电机试验方法<br>Test procedures for three-phase permanent magnet synchronous machines | | GB/T 22669 |
| 旋转电动机损耗与效率确定的标准测试方法<br>Rotating electrical machines – Part 2-1: Standard methods for determining | IEC 60034-2 | GB/T 1032 |
| 旋转电机整体结构的防护等级（IP 代码）分级<br>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 |
| 旋转电动机冷却方法<br>Rotating electrical machines – Part 6: Methods of cooling (IC Code) | IEC 60034-6 | GB/T 1993 |
| 旋转电动机结构型式、安装型式及接线盒位置的分类（IM 代码）<br>Rotating electrical machines – Part 7: Classification of types of construction, mounting arrangements and terminal box position (IM Code) | IEC 60034-7 | GB/T 997 |
| 旋转电动机旋转电机线端标志与旋转方向<br>Rotating electrical machines – Part 8: Terminal markings and direction of | 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<br>Rotating electrical machines – Part 3: Noise limits | IEC 60034-9 | GB 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<br>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 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<br>Rotating electrical machines – Part 1: Frame numbers 56 to 400 and flange numbers 55 to 1080 | IEC 60072-1 | GB/T 4772.1 |
| 中小型旋转电机安全要求<br>Safety requirements of small and medium size rotating electrical machines | IEC 60085 | GB 14711 |
| 旋转电动机温升<br>Electrical insulation – Thermal classification | IEC 60085 | GB/T 11021 |
| 电工电子产品自然环境条件 温度和湿度<br>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<br>Standard voltages | IEC 60038 | GB/T 156 |

## 型号含义 Meaning of type code




## 铭牌信息 Nameplate




| | | | | | |
|---|---|---|---|---|---|
| 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 | 功率因素 | 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 | | | |

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℃ ~ 40℃（IEC 60034-1）；

所允许的相对湿度：

20℃ ≤ T ≤ 20 ℃：100 %

20 ℃ < T ≤ 30 ℃：95 %

30 ℃ < T ≤ 40℃：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（$P_{adm}$）：

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

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

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

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

Permitted relative humidity:

-20℃ ≤ T ≤ 20℃ : 100 %

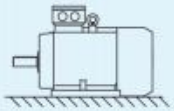
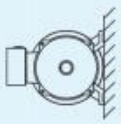
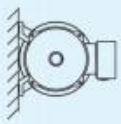
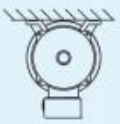
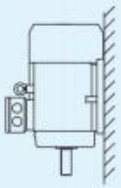
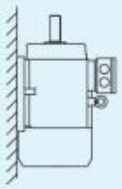
20 ℃ < T ≤ 30℃ : 95 %

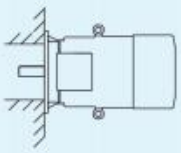
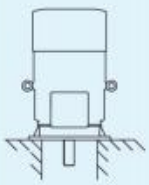
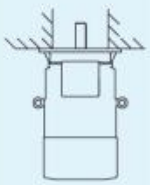
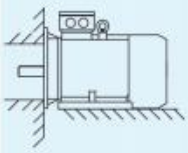
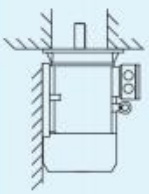
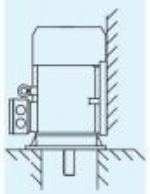
30 ℃ < T ≤ 40℃: 55 %

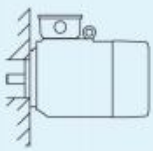
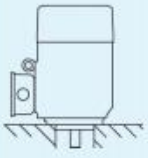
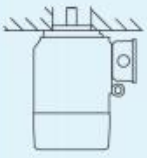
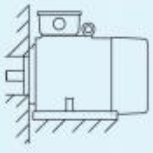
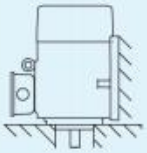
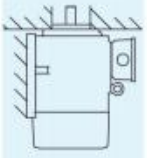
For higher coolant temperatures and/or site altitudes higher than 1000m above sea level, the specified motor output must be reduced by using the factor $k_{HT}$. The results in an admissible output ($P_{adm}$) of the motor: $P_{adm} = P_{rated} \bullet k_{HT}$

| 对于不同高度和（或）不同环境温度的功率换算系数 $k_{HT}$<br>Factor $k_{HT}$ for different side altitudes and / or coolant temperature | | | | | | |
|---|---|---|---|---|---|---|
| 环境温度<br>Ambient temperature | 对应环境温度的海拔高度<br>Site altitude above see level | | | | | |
| | 1000 m | 1500 m | 2000m | 2500 m | 3000 m | 4000 m |
| <30℃ | 1.07 | 1.04 | 1 | 0.96 | 0.92 | 0.82 |
| 30 ~ 40 ℃ | 1 | 0.97 | 0.94 | 0.9 | 0.86 | 0.77 |
| 45 ℃ | 0.96 | 0.93 | 0.9 | 0.86 | 0.82 | 0.74 |
| 50℃ | 0.92 | 0.89 | 0.86 | 0.83 | 0.79 | 0.71 |
| 55 ℃ | 0.87 | 0.84 | 0.82 | 0.78 | 0.75 | 0.67 |
| 60 ℃ | 0.82 | 0.79 | 0.77 | 0.74 | 0.7 | 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 | IM B3 FS 80 ~ 355 | IM B6 FS 80 ~ 315 | IM B7 FS 80 ~ 315 | IM B8 FS 80 ~ 315 | IM V5 FS 80 ~ 315 | IM 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 | IM B5 FS 80 ~ 315 | IM V1 FS 80 ~ 355 | IM V3 FS 80 ~ 315 | IM B35 FS 80 ~ 355 | IM V15 FS 80 ~ 315 | IM 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 | IM B14 FS 80 ~ 160 | IM V18 FS 80 ~ 160 | IM V19 FS 80 ~ 160 | IM B34 FS 80 ~ 160 | IM V17 FS 80 ~ 160 | IM 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<br>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）<br>The first digit<br>(protection from introduction of solid foreign matter) | | 第一位数字（防止水侵入）<br>The second digit<br>(protection against penetration of water and its harmful effects) | |
| IP | 定义<br>Definition | IP | 定义<br>Definition |
| 0 | 无防护<br>No protection | 0 | 无防护<br>No protection |
| 1 | 直径>=50mm<br>Diameter>=50mm | 1 | 垂直滴水<br>Dropping vertically |
| 2 | 直径>=12.5mm<br>Diameter>=12.5mm | 2 | 滴水（倾斜 15°）<br>Dropping (up to 15° ) |
| 3 | 直径>=2.5mm<br>Diameter>=2.5mm | 3 | 防洒水<br>Sprayed |
| 4 | 直径>=1.0mm<br>Diameter>=1.0mm | 4 | 防飞溅<br>Splashed |
| 5 | 有限防尘<br>Limited protection against dust | 5 | 防喷射<br>In stream |
| 6 | 完全防尘<br>Dust tight | 6 | 防强力喷射<br>In strong steam |
| | | 7 | 水下短时浸没<br>Under short-time immersion |
| | | 8 | 水下长时间沉没<br>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 regreasable bearing and regreasing device. If necessary, frame size 100 ~ 250 motor can be configured with regreasable 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 | 6204ZZ | 6204ZZ | 6204ZZ | 6204ZZ |
| 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.

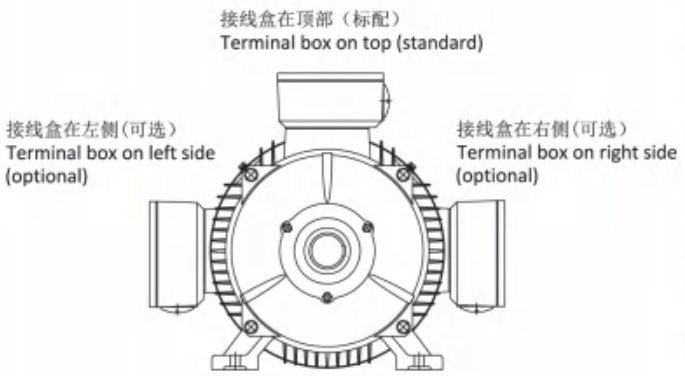
When the motor runs outside of normal conditions, the bearing life will be reduced, such as the following conditions.

■ 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

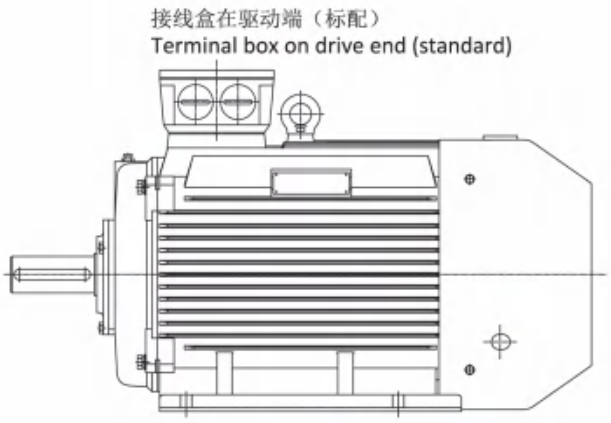


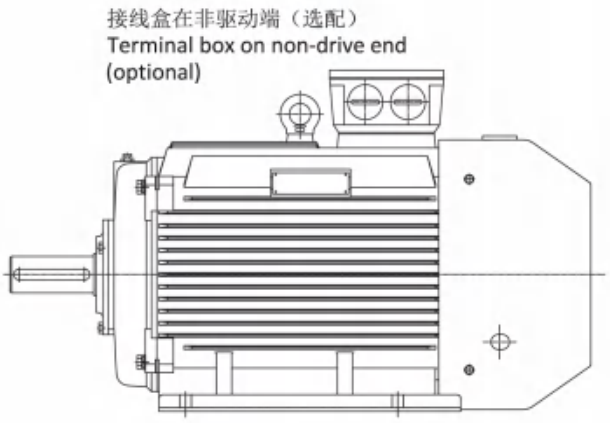

JPM 系列电机主接线盒在轴伸端顶部（标准位置），也可以处于机座的左侧或右侧。

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 90º, 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流（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，可选配后弯式风扇。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声。

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 configurated.

■ 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.

# 电气特性 Electrical design

## 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<br>No. | 参量<br>Quantity | 容差<br>Tolerance |
|---|---|---|
| 1 | 效率 Efficiency η<br>$P_{rated}$ ≤150kW<br>$P_{rated}$ ≥150kW | -15% of (1- η)<br>-10% of (1- η) |
| 2 | 功率因素<br>Power factor | -1/6 (1-cosø)<br>最小绝对值 Minimum absolute value: 0.02<br>最大绝对值 Maximum absolute value: 0.07 |

## 过载倍数 Overload times

按 IEC60034 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, 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 P22）

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 22 ).

## 电动机保护 Motor protection

### 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。温度传感器的引接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.

## 主要技术参数 Main electric specification

### 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 | | 200 | | 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 |

## 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 | | 100 | | 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-Z355M1 | 280 | | 461 | | 97.3 | | 150 | | 1602 |
| JPM315-1500-Z355L12 | 315 | | 517 | | 97.3 | | | | 1687 |
| JPM355-1500-Z355L12 | 355 | | 583 | | 97.3 | | | | 1815 |

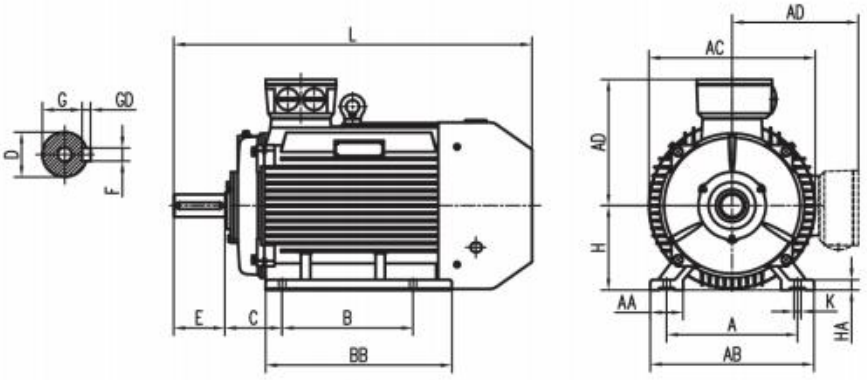
## 额定转速 1000rpm Rated speed 1000rpm

| 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 | | 66.7 | | 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 | | 100 | | 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 |

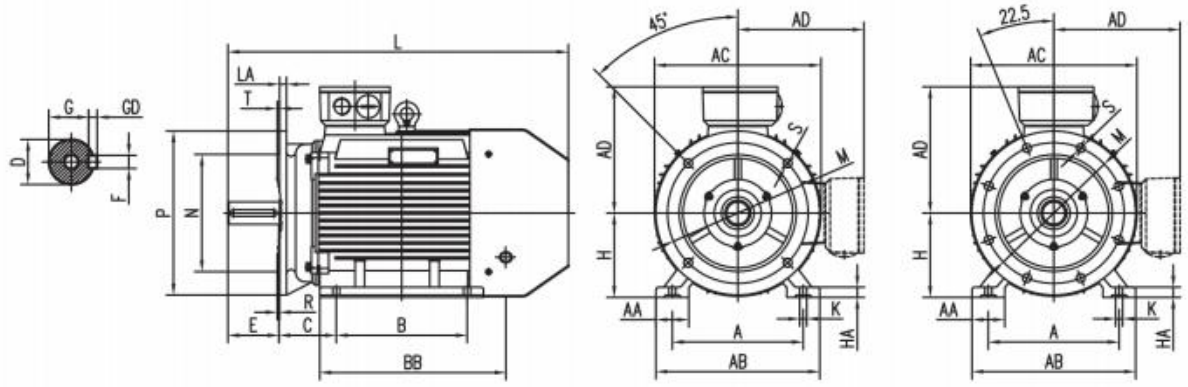
## 额定转速 750rpm Rated speed 750rpm

| 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 | | 50 | | 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 | | 75 | | 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

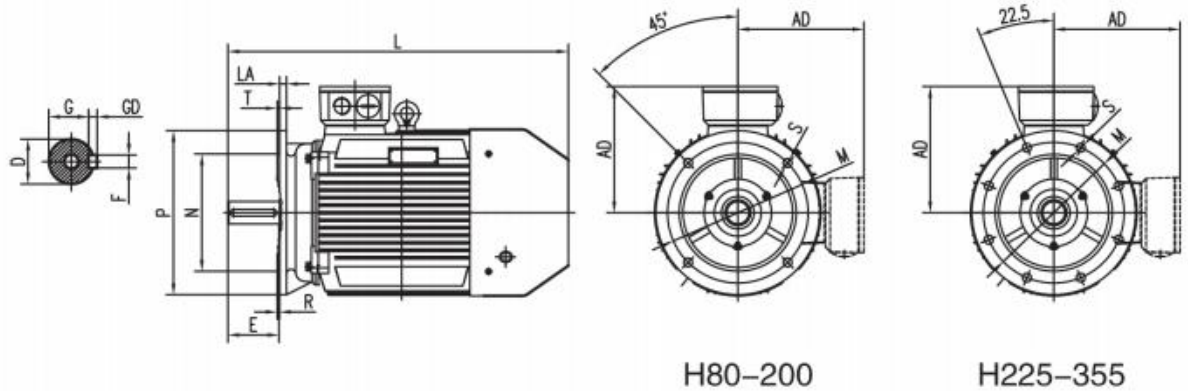



## B35 安装型式 尺寸 Dimensions for B35 mounting




H80–200　　H225–355

## B5 安装型式 尺寸 Dimensions for B35 mounting




H80–200　　H225–355

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

| 机座号 | B3/B35 尺寸<br>B3/B35 Dimensions | | | | | | | | | | 通用尺寸<br>Universal Dimensions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Frame size | A | AA | AB | B | BB | HA | HD | H | K | C | AC | AD | L | |
| | | | | | | | | | | | | | 3000rpm | Other |
| 80 | 125 | 37 | 165 | 100 | 135 | 10 | 220 | 80 | 10 | 50 | 165 | 145 | 295 | |
| 90S | 140 | | 180 | 100 | 140 | 12 | 250 | 90 | | 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 | | 228 | 20 | 345 | 132 | | 89 | 275 | 213 | 508 | |
| 132M | | | | 178 | 266 | | | | | | | | 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 | | 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 | | 149 | 470 | 335 | -- | 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 | 400 | 985 | |
| 280M | | | | 419 | 540 | | | | | | | | 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。

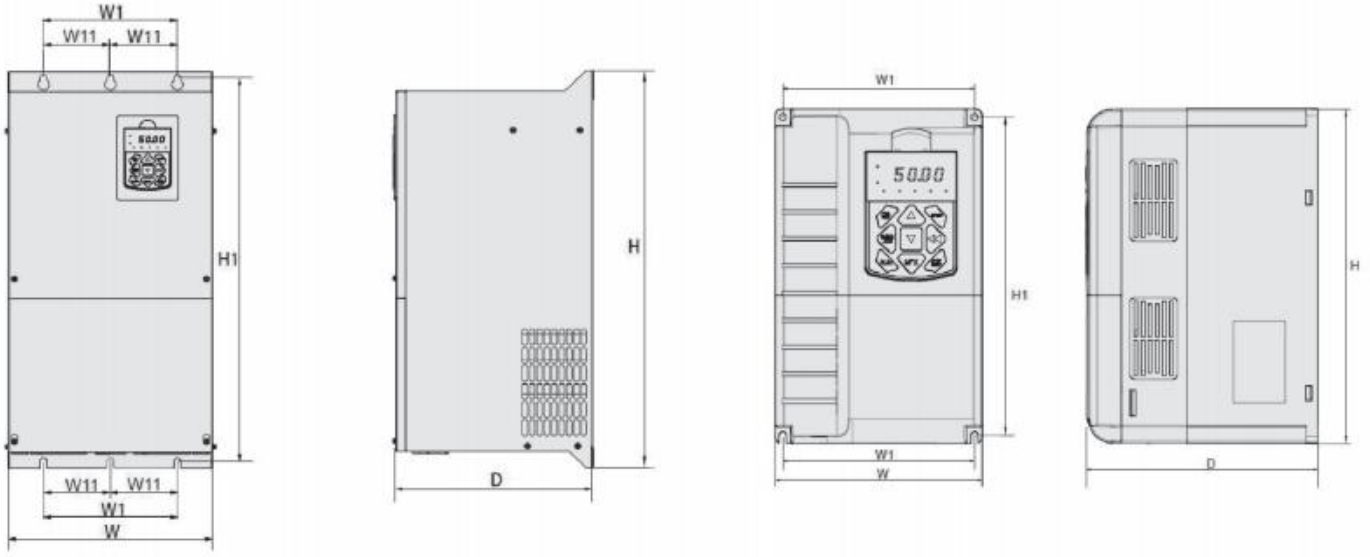
ES500 series variable frequency driver is a kind of high-performance vector control variable frequency driver, supports encoder-free vector control and close-loop vector control, high-reliability, easy operation, multi-functional, supports various kind encoder and communication interface, it supports 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<br>ES500-4T 5.5PB | 8.9 | 14.6 | 13 | 5.5 | 7.5 |
| ES500-4T 7.5GB<br>ES500-4T 7.5PB | 11 | 20.5 | 17 | 7.5 | 10 |
| ES500-4T 11GB<br>ES500-4T 11PB | 17 | 26 | 25 | 11 | 15 |

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

| ES500 系列钣金架构外形及安装尺寸<br>Outline and mounting dimension of ES500 metal plate series | | | | | | | |
|---|---|---|---|---|---|---|---|
| 产品功率等级<br>Product power | 外形尺寸<br>Outline (mm) | | | 安装尺寸<br>Mounting dimension (mm) | | | 安装孔径<br>Install hole diameter |
| | W | H | D | W1 | H1 | W11 | （mm） |
| 15kW-18.5kW | 217 | 335 | 184 | 140 | 324 | N/A | Φ4 |
| 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系列塑料架构外形及安装尺寸<br>Outline and mounting dimension of ES500 plastic house series | | | | | | |
|---|---|---|---|---|---|---|
| 产品功率等级<br>Product power | 产品功率等级<br>Product power | | | 产品功率等级<br>Product power | | 产品功率等级<br>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 |



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