Honeywell | Motor & Drive Solutions

Motor Products

Honeywell HPM Series
Low voltage Ultra Premium Permanent Magnet Motors

Intelligence

Variable Speed drive

Efficiency

Ultra high Efficiency Level

Safety

IP55 Protection Grade

Quality

Reliable Quality Control

To meet the growing market demand for high-efficiency industrial products, Honeywell has developed HPM series IE5 ultra-high efficient permanent magnet synchronous motor, which can be widely used in fan, water pump, compressor, rubber, plastic processing, feed grinding, machine tools and other industires.
The motor follows International Electrotechnical Commission IE5 high efficiency motor standard, and it meets the requirements of all kinds of mechanical equipment for high energy efficiency as well, so as to effectively reduce energy consumption and carbon emissions. At the same time, we can also provide customized solutions according to your special requirements.

Honeywell HPM series ultra-high efficient permanent magnet synchronous motor overall introduction

Market trend of high energy efficiency and the prospect of permanent magnet synchronous motor:

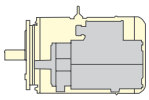
The national 3060 Carbon Peak & Carbon Neutral target was set, and a green, low-carbon and circular economic system will be taken shape in 2025. Industrial energy utilization efficiency will be greatly improved. By 2030, remarkable progress will be made in the comprehensive green transformation of economic and social development, with a focus on energy consumption . Industrial energy utilization efficiency has reached the international advanced level. Carbon dioxide emissions have peaked and achieved a steady decline. In 2060, an economic system featuring low-carbon and circular development and a clean, low -carbon, safe and efficient energy system will be fully established, and energy efficiency will reach the international level. The proportion of non-fossil energy consumption reached over 80%, and the target of carbon neutrality will be successfully achieved.

Energy saving for motor is the key area of national energy saving and emission reduction plan. With the release of the latest motor energy efficiency standards in China, "GB 18613-2020 Motor Energy efficiency Limit and Energy Efficiency Grade", the domestic motor industry plan to fully enter the IE3 efficient era. At the same time, IE4 efficiency and IE5 efficiency is also listed as the second and first level energy saving value index. Following the latest standards and national energy saving plan, Honeywell introduced permanent magnet synchronous motors to achieve IE5 and level1 energy efficiency by reducing electromagnetic energy, thermal energy and the loss of mechanical energy to improve the output efficiency of the motor. High efficiency and energy-saving motor will fully replace the traditional low-efficiency motor to help all enterprises to achieve the two-carbon target.

The HPM series permanent magnet synchronous motor has the following features:

- High efficiency and energy saving: the permanent magnet motor efficiency achieves or exceeds IE 5 and China Level 1 energy efficiency, using high-performance rare earth permanent magnet materials, low-loss silicon steel sheet optimized magnetic circuit design, can easily achieve efficient output, reduce energy consumption

IEC60034-30	GB18613-2020	GB18613-2012
IE5	Energy efficiency level 1 1st LV	
IE4	Energy efficiency level 2 2nd LV	Energy efficiency level 1 1st LV
IE3	Energy efficiency level 3 3rd LV	Energy efficiency level 2 2nd LV
IE2		Energy efficiency level 3 3rd LV
IE1		



- Smaller size and less weight: compared with the asynchronous motor at the same speed and power, weight of PM motor can be reduced up to 50%
- Stable and reliable: the permanent magnet synchronous motor adopts magnetic materials with high temperature resistance grade after reliable simulation check and test verification. Motors are manufactured under Honeywell highest quality quality control process which can make motors more reliable and stable
- Wider efficient operation range: permanent magnet synchronous motor at 20% -120% load can maintain at a high and stable efficiency and power factor at 20% -120% working load
- Easy to control: with Honeywell vector inverter, user can achieve precise speed, torque control of motor. The HPM series permanent magnet synchronous motor can also be widely matched with a variety of other brands permanent magnet vector inverter Smaller Sizeand less weight: compared with the asynchronous motor at the same speed and power, weight of PM motor can be reduced up to 50%

Technical features of HPM series permanent magnet synchronous motor:

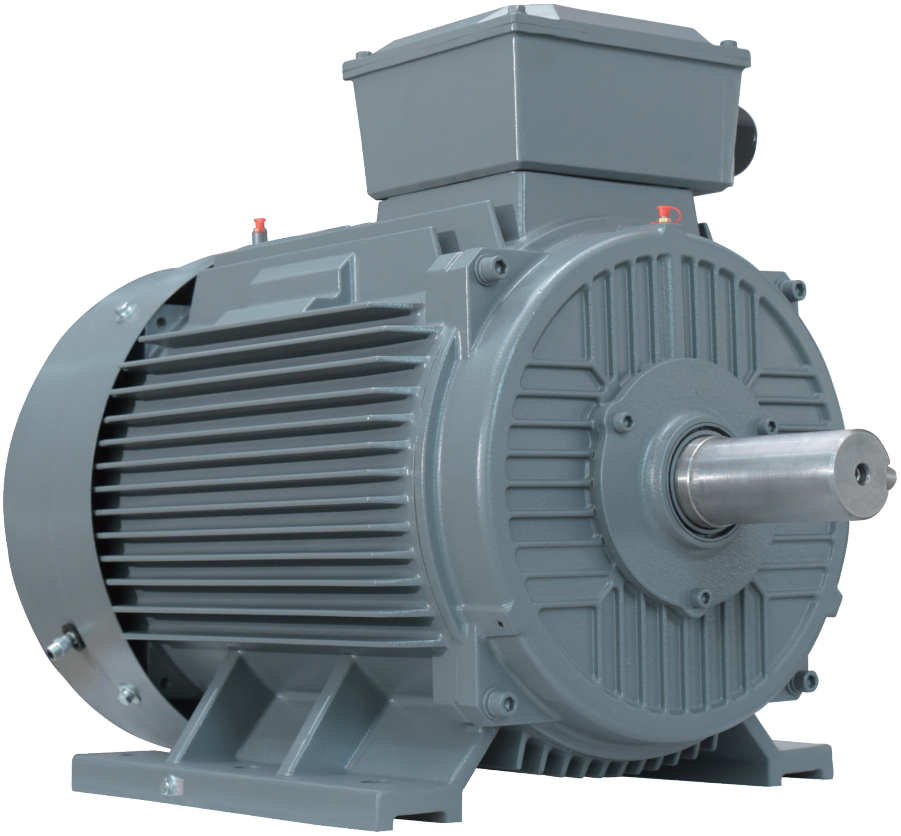
- Standard voltage and frequency: 380V, the frequency is set according to the design poles
- Power range: 4~560kW (750 RPM, 1000 RPM,1500 RPM, 3000 RPM), other speed can also be determined by requirement
- Carefully designed for an industrial exterior design
- IP55 Protection level
- F-class insulation level, grade B temperature rise standard with international brand high quality bearings
- The maximum torque multiple is not less than 2 times, with good short-time impact resistance overload capacity
- Designed for frequency conversion applications, standard self-fan air-cooled design can maintain constant torque output under 50% -100% RPM
- Stator winding is standard with PTC, other kinds of heat protection are optional ,combined with controller can achieve the motor temperature protection
- Customized solutions can be provided according to the special customer requirements

HPM series permanent magnet synchronous motor operation environment:

- Temperature: -20°C ~ +40°C
- Altitude: not more than 1000m
- Relative humidity: not more than 90%
- A suitable canopy cover is required if the motors are installed outdoors with exposure to direct sunlight, rain, snow and ice

IE5

IE5 Ultra-High efficiency to meet a variety of application scenarios



Reference standards

Honeywell HPM series permanent magnet synchronous motors comply with the following Standards:

Standard Name	IEC Standard	GB Standard
Rotating electrical machines rating and performance	IEC60034-1	GB755
Dimensions and output series for rotating electrical machines	IEC60072-1	GB/T4772.1
Efficiency classes of variable speed AC motors	TS IEC60034-30-2	GB30253-2013
Standard Voltages	IEC60038	GB/T156
Rotating electrical machines Terminal markings and direction of rotation	IEC60034-8	GB/T1971
General requirements for safety of small and medium size rotating electrical machines		GB/T14711
Environmental testing	IEC60068	GB/T2423
Rotating electrical machines Degrees of protection provided by the integral design of rotating electrical machines (IP) Classi cation	IEC60034-5	GB/T4942.1
Rotating electrical machinesNoise limits	IEC60034-9	GB/T10069.3
Rotating electrical machines - Methods of cooling	IEC60034-6	GB/T1993
Rotating electrical machines - Classification of types of constructions and mounting arrangements	IEC60034-7	GB/T997
Rotating electrical machinesMechanical vibration of certain machines with shaft heights 56 mm and higher measurement, evaluation and limits of the vibration severity	IEC60034-14	GB10068

Efficiency and saving

High-efficiency and energy-saving applications

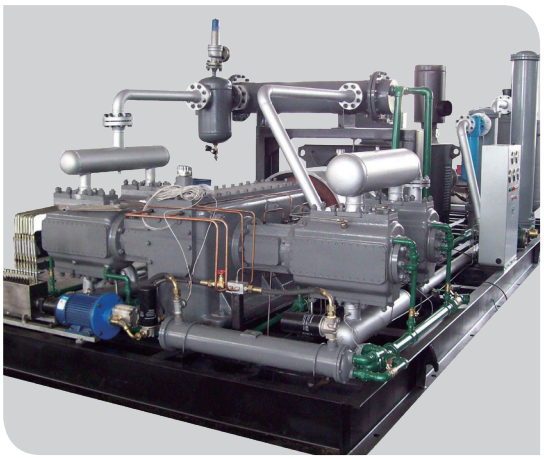
Around 65% of the world's electricity is used for motors. In the next five years, China will add 800 million KW capacity for motor. Under the guidance of the country's 3060 policy, the high efficiency motor has a very broad application scenarios. Honeywell HPM series permanent magnet synchronous motor can save energy consumption and reduce the life cycle operating costs, improve production efficiency, to provide a huge push for the long-term development of the factory. Honeywell HPM permanent magnet synchronous motor can be widely used in the fan, water pump,compressor, rubber and plastic processing, feed grinding, machine tools and other fields for the enterprise energy saving and efficiency improvement.

Fan

Pump

Food Grinding

Rubber Processing



Efficiency and saving

Significant saving operating costs

Honeywell HPM series permanent magnet synchronous motor with Honeywell permanent magnet special vector frequency converter,can provide customers significant efficiency improvement. Generally, the purchase cost of motor and frequency converter can be covered within 1~2 years through saving in electricity cost.

Take the 160kW HPM5 permanent magnet synchronous motor as an example:

HPM 5-S-315ML-1500-160-A-GS:

Efficiency = 97.2%

Input power: P1=P2 / η =160kW / 97.2%=164.61kW

Ordinary efficiency motor:

efficiency = 94.9 %

Input power: P1=P2 / η = 160kW/94.9%=168.60kW

Annual operating cost:

Annual operating cost = input power x running time X electricity price,

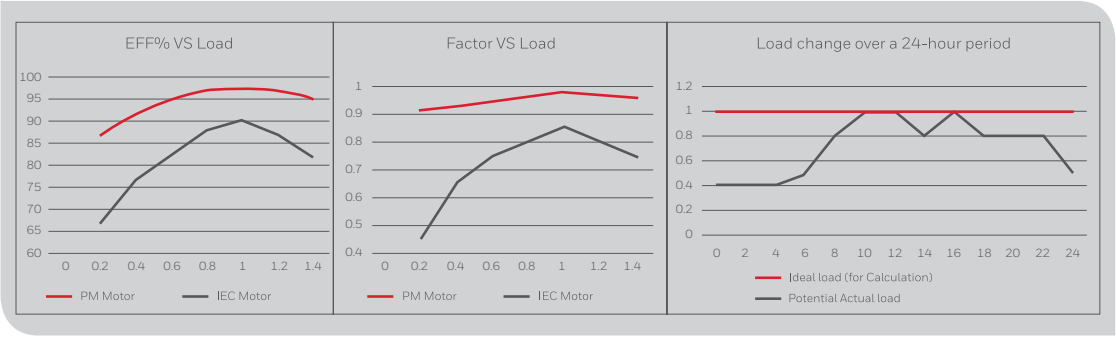
Annual electricity fee saving:

Annual electricity saving = (168.60-164.61) x 8,760x 134,952.4 yuan

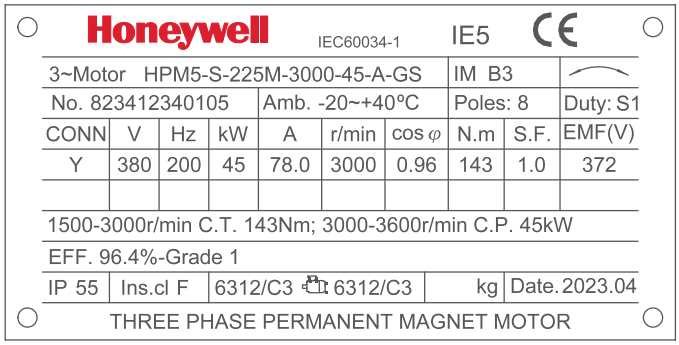
(Calculated as annual working 8760 hours, electric charge 1 yuan / kWh)).

Wider high-efficiency working load range

When most motors are in actual operation, the load is not constant at full or close to full. The load varies over a wide range (e. g 30% -100%), therefore, the energy saving efficiency of HPM 5 permanent magnet synchronous motor will be further improved than the improvement of full load nominal efficiency. Under most working condition, the power saving efficiency can reach 10%, as like the above example of 160kW permanent magnet synchronous motor, the annual electricity saving can be more than 100,000 yuan.



Rating plate



Honeywell	IEC60034-1	IE5	CE	
3~Motor HPM5-S-225M-3000-45-A-GS			IM B3	
No. 823412340105	Amb. -20~+40°C		Poles: 8	Duty: S1

CONN	V	Hz	kW	A	r/min	cos φ	N.m	S.F.	EMF(V)
Y	380	200	45	78.0	3000	0.96	143	1.0	372

1500-3000r/min C.T. 143Nm; 3000-3600r/min C.P. 45kW				
EFF. 96.4%-Grade 1				
IP 55	Ins.cl F	6312/C3 6312/C3	kg	Date. 2023.04
THREE PHASE PERMANENT MAGNET MOTOR				

Standard rating plate provides the values of the speed, current and power factor for the three voltages above. Values are for reference only, please seeing the actual rating plate.

Nomenclature

HPM5 - S - 315 - ML - 1500 - 160 - A - GS

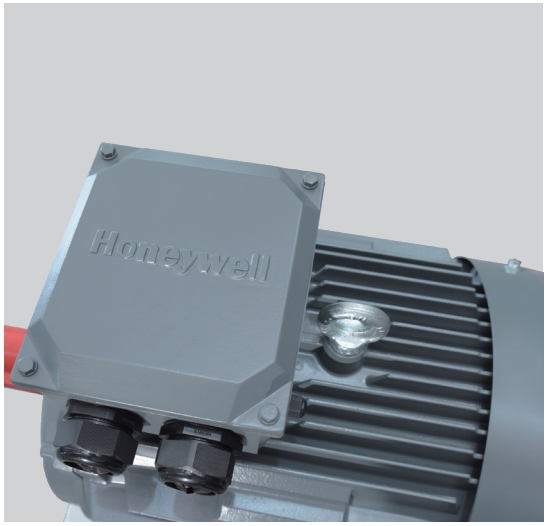
HPM5	S	315	ML	1500	160	A	GS
Honeywell HPM series of low-voltage and ultra-high efficient permanent mag net synchronous motor	Standard permanent magnet synchroniza tion	Frame Size: 112, 132, 160, 180, 200, 225, 250, 280, 315, 355	Frame Length: S: short M: Middle ML:Middle long L: Large	RPM: 3000, 1500, 1000, 750	Power	Internal Suffix	Internal Suffix

If you need more product information, welcome to the landing website www.honeywellmotors.com or to inquire the technical hotline 4008766608.

Mechanical features

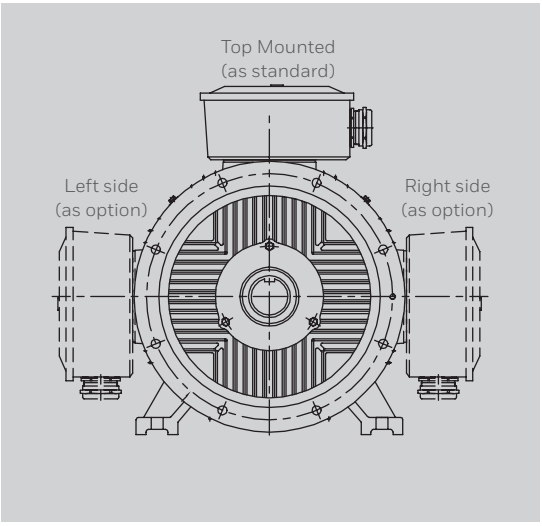
Terminal box

The terminal box of Honeywell HPM series permanent magnetsynchronous motor locates on the top of the motor as standard. The terminal box is 4*90-degrees rotatable. Therefore, cables are able to lead through from different directions. (For some motors, after rotating 90°C, the box may interfere with the lifting lug or the load equipment, please pay attention) All terminal boxes are fitted with one or two cable glands. Internal earthing is installed inside terminal box.



Position of the terminal box

Besides the standard position, terminal box can be mounted on right side or left side of the motor. The position of terminal box can be ordered as variant code.



4×90°
rotatable
(as standard)

Plastic cable gland

Honeywell HPM series permanent magnet synchronous motor is fitted with 2-3, plastic cable Gland.
Plastic cable gland size is shown in the right table:

Terminal box parameters

Frame Size	Cable gland size for main power supply	Suitable for cable outer diameter (mm)
80~90	2-M25 x 1.5	13-18
100	2-M32 x 1.5	18-25
112~132	2-M32 x 1.5	18-25
160~180	2-M40 x 1.5	22-32
200~225	2-M50 x 1.5	32-38
250~280	2-M63 x 1.5	37-44
315	2-M63 x 1.5	37-44
355	2-M72 x 2	42-50

If the motor is equipped with component in winding, the terminal box will add an M16 x 1.5 plastic cable gland which is suitable for the cable outer diameter between 4-8mm. For other special requirements, please refer to the variable codes.

Mechanical features

Cooling

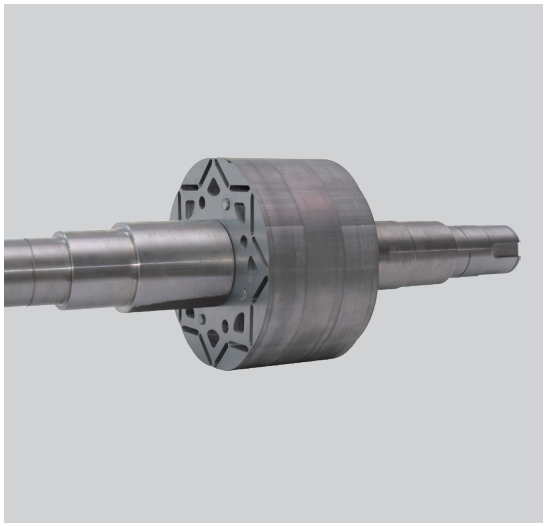
Honeywell HPM series permanent magnet synchronous motor's cooling method is IC411 self-ventilation according to IEC60034-6 standard.
Centrifugal cooling fan is mounted on the shaft as standard, and the cooling effect is irrelevant with rotation direction. single direction of rotation and low noise fan can be ordered if extremely low noise is needed. A separate cooling fan is usually needed when motor is running atvery low speed in VSD application, please refer to variable speed drive page.

Ventilation

Honeywell HPM series permanent magnet synchronous motors have specially optimized the ventilation system.
The fan cover is made of high-performance material with doublelayer design, and the ventilation holes are honeycomb mesh design, which has both beautiful appearance and better heat dissipation performance. It can also better repair the deformation of the cover caused by mechanical collision.

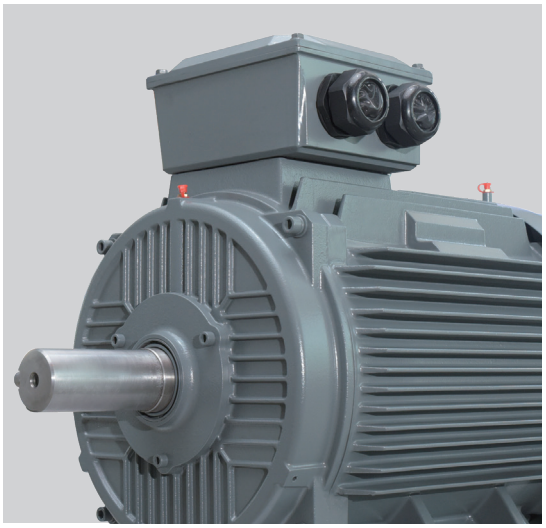
Rotor design

Honeywell HPM permanent magnet synchronous motor adopts embedded high-temperature resistant grade permanent magnet material. After stable magnetic treatment and surface chemical treatment, magnetic pole optimization design and simulation check, it greatly reduces the risk of demagnetization.



Structural strength

The structure of Honeywell HPM series permanent magnet synchronous motor is solid and stable, using high grade cast iron material and high performance shaft steel. Makes the motor is more suitable to withstand the shock and vibration during normally running.



Mechanical features

Bearing system

All types of Honeywell HPM series of permanent magnet synchronous motor are normal fitted with international brand bearings, if you have special requiement for bearing, please refer to variant code page for more detail. Motors from frame size 112 to 160 are equipped with deep groove ball bearings greased for life. Motors from frame size 180 and above are equipped with regreasible deep groove ball bearings as standard. If higher cantilever force is needed, motors from frame size 160 to 355 are able to equipped with roller bearings. The bearing configuration is shown in the right table, and the lubrication and maintenance of bearings is available in the operation and maintenance manual.

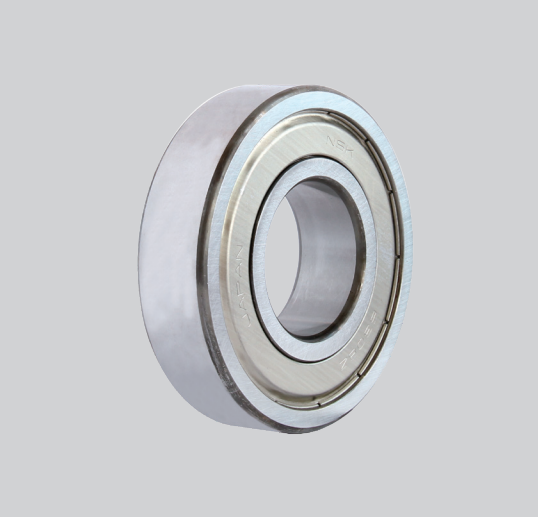


Table of bearing's standard designs

Frame Size	RPM	Bearing	
		Drive End	Non-drive End
112	750/1000/1500/3000	6306-2Z/C3	6306-2Z/C3
132	750/1000/1500/3000	6308-2Z/C3	6308-2Z/C3
160	750/1000/1500/3000	6309-2Z/C3	6309-2Z/C3
180	750/1000/1500/3000	6311/C3	6311/C3
200	750/1000/1500/3000	6312/C3	6312/C3
225	750/1000/1500/3000	6313/C3	6312/C3
250	750/1000/1500/3000	6314/C3	6313/C3
280	3000	6314/C3	6313/C3
280	750/1000/1500	6317/C3	6314/C3
315	3000	6317/C3	6317/C3
315	750/1000/1500	6319/C3	6319/C3
355	3000	6319/C3	6319/C3
355	750/1000/1500	6322/C3	6322/C3

1. If special bearings are needed, please provide the radial and axial force including its direction.
2. The standard permanent magnet synchronous motor has included the current corrosion resistance treatment under the frequency conversion drive, if you require to choose insulating bearings, please refer to the variable code.

Vibration

Honeywell HPM series permanent magnet synchronous motor is well designed, high-precision manufactured and using strict assembly process in order to decrease vibration magnitude. Thus, the lifetime and mechanical performance of the motor has been increased.

Measured vibration magnitude (r.m.s) at no-load should not exceed the value in the table.

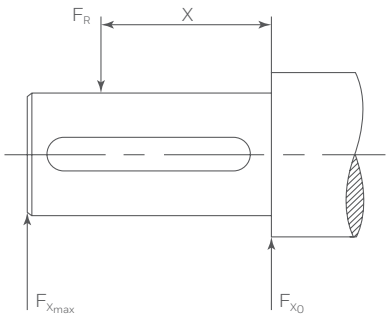
Vibration level	Installation method	56mm≤H≤132		H > 132	
		Displacement/ (um)	Speed/ (mm/s)	Displacement/ (um)	Speed/ (mm/s)
A	Free suspension	45	2.8	45	2.8
	Rigid mounting	-	-	37	2.3 (2.8*)
B	Free suspension	18	1.1	29	1.8
	Rigid mounting	-	-	24	1.5 (1.8*)

Grade A applies to machines with no special vibration requirements.
Grade B applies to machines with special vibration requirements.
* This level is the limit when the twice line frequency vibration level is dominant as defined in 8.2 and explained in Figure 7 in IEC60034-14.

Mechnical design

Permissible Radial Forces

Bearing life is directly related to the radial force under radial load (such as pulley connection, impeller direct connection). The permissible radial force when the standard motor is equipped with bearings, IMB3(foot mounted), and zero axial force is shown in the table. X refers to the distance from the shaft extension shoulder to the the radial force F_R. Therefore, when the length $X=X_{max}$, X is the standard shaft extension E (see dimension drawing):



If the radial force is applied between points X_0 and X_{max}, the permissible force F_R can be calculated with the following formula:

$$F_R = F_{X_0} - \frac{X}{E}(F_{X_0} - F_{X_{max}})$$

E is length of the shaft extension in the standard version.

Standard frame size

Frame Size	Maximum allowable radial force for shaft extension (N) - 20000h (L10h)							
	3000rpm		1500rpm		1000rpm		750rpm	
	F_{X_0}	$F_{X_{max}}$	F_{X_0}	$F_{X_{max}}$	F_{X_0}	$F_{X_{max}}$	F_{X_0}	$F_{X_{max}}$
112M	1399	1130	1761	1422	-	-	-	-
132S	2140	1674	2692	2105	-	-	-	-
132M	-	-	2727	2191	3124	2510	-	-
160M	2747	2127	3452	2673	3953	3061	4358	3374
160L	2774	2200	3479	2759	3987	3162	4394	3484
180M	3805	3041	4786	3826	-	-	-	-
180L	-	-	4814	3910	5520	4484	6076	4936
200L	4325	3565	5433	4479	6233	5138	6869	5662
225S	-	-	6121	4815	-	-	7735	6084
225M	4607	3834	6105	4802	7007	5511	7715	6069
250M	5430	4416	6824	5549	7836	6372	8631	7018
280S	7002	5774	8825	7277	10087	8318	11105	9157
280M	5494	4588	8890	7424	10160	8485	11180	9336
315S	6696	5733	10063	8306	11560	9541	12748	10522
315ML	6698	5832	10027	8453	11549	9737	12717	10722
355ML	7221	6431	12852	11146	15007	13015	16589	14386

Mechnical design

Standard frame size (continuing)

Frame Size	Maximum allowable radial force for shaft extension N) - 40000h (L10h)							
	3000rpm		1500rpm		1000rpm		750rpm	
	F_{X0}	F_{Xmax}	F_{X0}	F_{Xmax}	F_{X0}	F_{Xmax}	F_{X0}	F_{Xmax}
112M	1109	895	1395	1127	-	-	-	-
132S	1695	1325	2131	1666	-	-	-	-
132M	-	-	2158	1734	2473	1987	-	-
160M	2177	1686	2733	2117	3130	2424	3452	2673
160L	2195	1741	2750	2181	3152	2500	3475	2756
180M	3013	2408	3788	3028	-	-	-	-
180L	-	-	3806	3092	4367	3547	4807	3905
200L	3421	2820	4294	3540	4929	4063	5433	4479
225S	-	-	4836	3804	-	-	6115	4810
225M	3643	3032	4820	3791	5535	4354	6096	4795
250M	4284	3484	5381	4376	6184	5029	6813	5540
280S	5543	4570	6986	5761	7983	6582	8788	7247
280M	4343	3627	7036	5876	8038	6712	8844	7386
315S	5280	4521	7935	6549	9123	7530	10067	8309
315ML	5257	4578	7870	6635	9080	7656	10000	8431
355ML	5536	4931	9932	8614	11665	10116	12910	11196

PM smaller frame size

Frame Size	Maximum allowable radial force for shaft extension (N) - 20000h (L10h)							
	3000rpm		1500rpm		1000rpm		750rpm	
	F_{X0}	F_{Xmax}	F_{X0}	F_{Xmax}	F_{X0}	F_{Xmax}	F_{X0}	F_{Xmax}
112M	1397	1128	1760	1421	-	-	-	-
132M	-	-	2727	2191	3124	2510	-	-
160M	2731	2115	3448	2670	3949	3058	4354	3372
160L	-	-	3453	2738	3955	3137	4378	3472
180M	3755	3001	4719	3772	5425	4336	5988	4786
200L	4228	3485	5359	4418	6159	5076	6787	5594
250M	5321	4327	6744	5484	7769	6318	8567	6967
280S	5263	4339	-	-	9888	8153	10894	8983
280M	5056	4223	8506	7103	9712	8110	10709	8943
280M1	4794	4064	8095	6862	9217	7813	10183	8632
315ML	5996	5222	9274	7821	10627	8962	11828	9975
355ML	6499	5789	12074	10472	13864	12025	15636	13562

Frame Size	Maximum allowable radial force for shaft extension (N) - 40000h (L10h)							
	3000rpm		1500rpm		1000rpm		750rpm	
	F_{X0}	F_{Xmax}	F_{X0}	F_{Xmax}	F_{X0}	F_{Xmax}	F_{X0}	F_{Xmax}
112M	1107	894	1394	1126	-	-	-	-
132M	-	-	2158	1734	2473	1987	-	-
160M	2161	1673	2729	2114	3126	2421	3449	2670
160L	-	-	2724	2160	3121	2475	3460	2744
180M	2963	2368	3721	2974	4283	3423	4731	3781
200L	3324	2740	4220	3479	4854	4001	5351	4411
250M	4176	3396	5301	4311	6117	4975	6749	5488
280S	4121	3398	-	-	7783	6418	8577	7072
280M	3906	3262	6652	5555	7590	6338	8373	6993
280M1	3682	3121	6303	5342	7165	6074	7925	6717
315ML	4563	3974	7130	6012	8171	6891	9125	7696
355ML	4810	4285	9145	7932	10511	9117	11946	10361

Electrical features

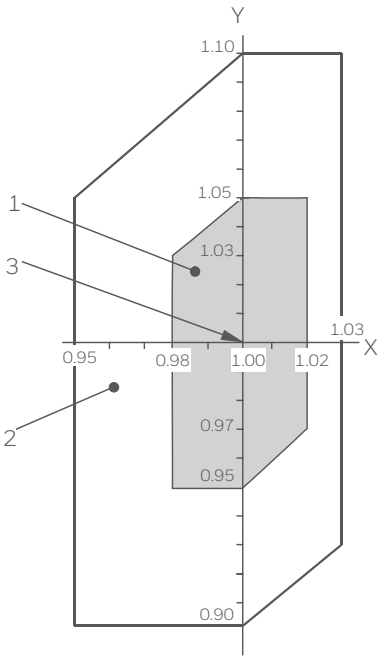
Environmental

In accordance with IEC 60034-1, tolerance is the maximum allowed deviation between the test result and the declared value on the rating plate(or in the catalog). Test results are based on test procedures in accordance with IEC 60034-2-1, IEC 60034-9 and IEC 60034-12.
According to IEC 60034, motors are designed to withstand overload capacity of 1.5 times rated current for 2 minutes at rated voltage and frequency.

Voltage and frequency

Rated voltage and frequency are 380V / 50Hz. Motors can also be designed according to customer requirements for other special voltage. For specific details, please see the Variant codes. The impact on temperature rise caused by voltage and frequency fluctuation is defined in IEC 60034-1.
The standard divides the combinations into two zones, zone A and B. Zone A is the combination of voltage deviation ±5% and frequency deviation ±2%. Zone B is the combination of voltage deviation ±10% and frequency deviation+3%/5%.
The motors can supply the rated torque in both zone A and B, but the temperature rise will be higher than at rated voltage and frequency. The motors are to be in operation only for a short period in zone B. The performance data on the rating plate is based on the parameter of rated point.

Connection：Y connection



X axis frequency p.u.
Y axis voltage p.u.
1 zone A
2 zone B(outside zone A)
3 rating point

Rated output:

Honeywell HPM series permanent magnet synchronous motor is totally enclosed, fan cooling(IC411), general high efficiency three phase squirrel cage motor, its rated power is output in the case of continuous long period (S1), Ambient temperature: -20°C~+40°C, Altitude 1000 meters above sea level.

Electrical data tolerance

	Efficiency	Power factor *	Starting current I_S / I_N	Locked torque T_l / T_N
P_N (kW) ≤ 150	-15 %(1-η)	-1/6 (1-cos φ)	+20 %	[-15 % + 25 %]
P_N (kW) > 150	-10 %(1-η)		Current	Torque
	Maximum torque T_b / T_N	Rotational inertia	Noise grade	
P_N (kW) ≤ 150	-10 %	± 10 %	+3 dB(A)	
P_N (kW) > 150	Torque	Moment of inertia		
	Slip ratio			
P_N (kW) ≤ 1	± 30 %			
P_N (kW) > 1	± 20 %			

* Tolerance of Power Factor Minimum Absolute Value: 0.02, Maximum Absolute Value: 0.07.

Electrical features

Ambient temperature and altitude

Normal motors are designed for operation at a maximum ambient temperature of 40°C and at a maximum altitude of 1000 meters above sea level. If a motor is operated at higher ambient temperatures or altitude, it should be derated. Detailed information, please contact Honeywell Motor and Drive.

The power conversion factor kHT for different heights and / or different ambient temperatures

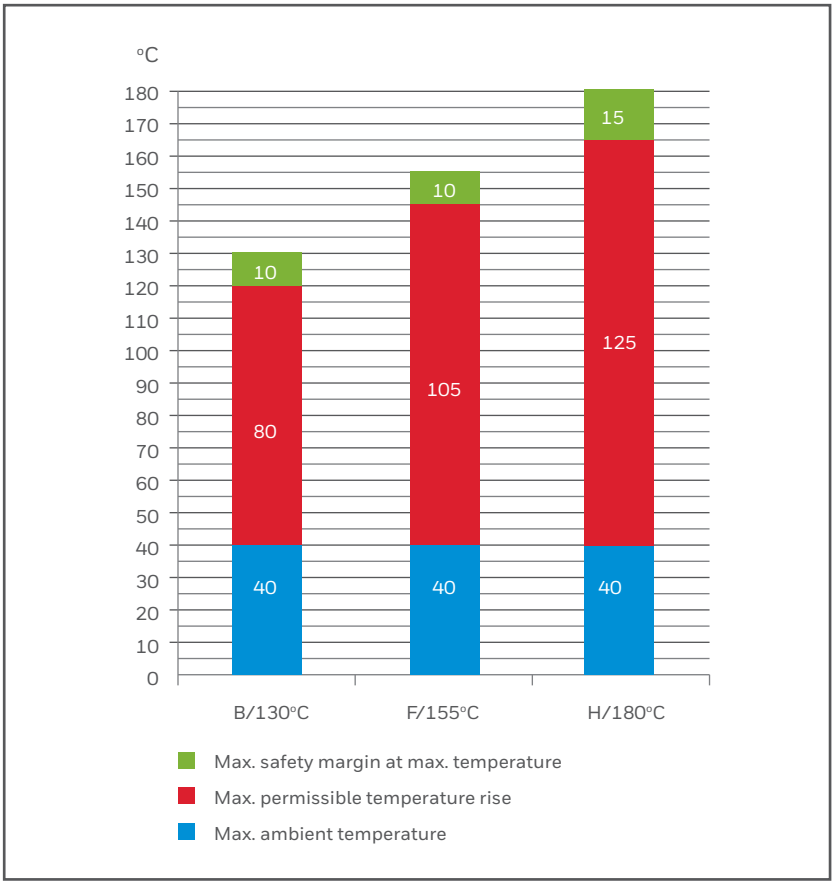
Altitude	Corresponding to the altitude of the ambient temperature					
	< 30°C	30 ~ 40°C	45°C	50°C	55°C	60°C
1000 m	1.07	1.00	0.96	0.92	0.87	0.82
1500 m	1.04	0.97	0.93	0.89	0.84	0.79
2000 m	1.00	0.94	0.90	0.86	0.82	0.77
2500 m	0.96	0.90	0.86	0.83	0.78	0.74
3000 m	0.92	0.86	0.82	0.79	0.75	0.70
3500 m	0.88	0.82	0.79	0.75	0.71	0.67
4000 m	0.82	0.77	0.74	0.71	0.67	0.63

Insulation system

Honeywell HPM series permanent magnet synchronous motors use class F insulation with temperature riseclass B. The safety margin of the temperature rise is upto 25K, it largely extends the lifetime of the motor, andenables the motor operate reliably under harsh environment.

	B/130°C	F/155°C	H/180°C
Max. ambient temperature	40	40	40
Max. permissible temperature rise	80	105	125
Max. safety margin at max. temperature	10	10	15

Insulation class and temperature rise class



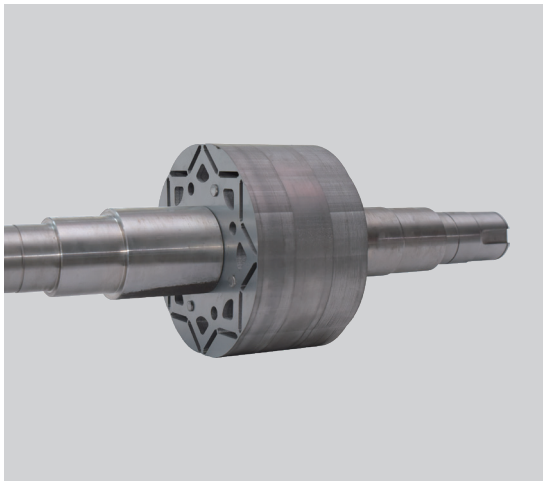
Electrical features

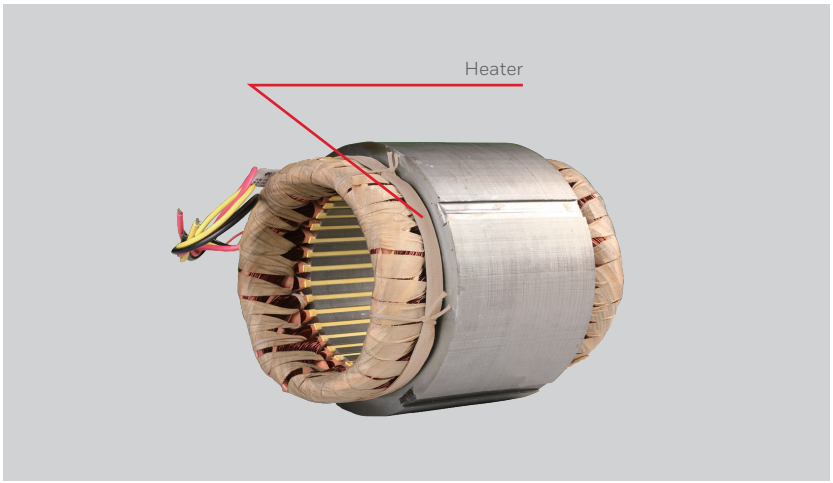
Motor Thermal Protection (optional, refer to variable code)

- Motor winding PTC protection is a commonly used winding protection method in the world. The PTC thermistor is embedded in the three-phase coil of the motor. When the temperature of the motor coil is close to the operating temperature (usually the insulation class temperature), the resistance of the PTC thermistor changes stepwise, and this signal is transmitted to the PTC control module, the control loop can be disconnected.
- A thermal protection switch is embedded in the winding, which is usually self-restoring and normally closed. When the temperature of the motor coil is close to the operating temperature (usually the insulation class temperature), its bimetallic part moves and the normally closed contact opens, which can disconnect the control loop.
- A platinum thermal resistance sensor embeddedd in the winding. The platinum thermal resistor is a sensor with high accuracy and sensitivity. It can be used with a temperature controller to directly display the winding temperature. It can also be converted into an analog signal through a temperature transmitter and connected to the controller to read the winding temperature to set the temperature and motor alarm and trip temperatures.
- Bearing protection: Generally speaking, the maximum allowable operating temperature of bearings is 95°C. It is recommended to monitor the bearing temperature on a daily basis. For more severe applications, it is recommended to install a platinum thermal resistance sensor on the bearing. It directly contacts the outer ring of the bearing and can be used with a temperature controller to directly reflect the operating temperature of the bearing. It can also be converted into an analog signal through a temperature transmitter and connected to the controller. The controller reads the winding temperature and can effectively detect the operating condition of the motor bearings to protect the motor.

Motor moisture-proof protection (optional, refer to variable code)

Honeywell HPM series permanent magnet synchronous motors can select anti -condensation heater and drain holes as optional. In a humid environment, after the motor stops working, condensation will easily occur inside the motor, which will reduce the insulation of the motor windings, and there is a risk of burning the motor. After the motor is installed with a anticondensation heater, the temperature of the motor windings is always 5°C higher than the ambient temperature, thereby avoiding condensation on the motor windings after shutdown. Another function is to prevent the motor from starting too cold (mainly for places with low ambient temperature).
Note: The motor anticondensation heater must start working after the motor is stopped and does not work when the motor is running.





Correct mounting arrangement must be provided when drain holes are ordered

Variable speed drive

Honeywell HPM5 series permanent magnet synchronous motor with Honeywell high-performance vector frequency converter, to provide customers with a complete set of control system, using honeywell frequency converter to control the motor, compared to the traditional motor control mode,It can reduce energy consumption, reduce maintenance costs, and improve production efficiency and product quality improvement, production process and automation level improvement, reduce the equipment volume and many other benefits.

Selection technical data

Standard frame size
Synchronized speed: 3000 RPM 380V

IE5 efficiency class according to IEC
TS 60034-30-2 and GB 30253-2013 (90kW and below)

IE5

Motor type	Rated Power kW	Rated speed r/min	Rated Current A	Efficiency (100%)	Power Factor Cosφ	Frequency Hz	Rated Torque N.m	Weight Kg
HPM5-S-112M-3000-4-A-GS	4	3000	7.16	93.3%	0.96	150	12.7	32
HPM5-S-132S-3000-5.5-A-GS	5.5	3000	9.77	94.0%	0.96	200	17.5	47
HPM5-S-132S-3000-7.5-A-GS	7.5	3000	13.3	94.5%	0.96	200	23.9	53
HPM5-S-160M-3000-11-A-GS	11	3000	19.3	95.0%	0.96	200	35.0	138
HPM5-S-160M-3000-15-A-GS	15	3000	26.3	95.3%	0.96	200	47.8	143
HPM5-S-160L-3000-18.5-A-GS	18.5	3000	32.3	95.6%	0.96	200	58.9	153
HPM5-S-180M-3000-22-A-GS	22	3000	38.3	95.9%	0.96	200	70.0	143
HPM5-S-200L-3000-30-A-GS	30	3000	52.2	96.1%	0.96	200	95.5	154
HPM5-S-200L-3000-37-A-GS	37	3000	64.2	96.3%	0.96	200	118	161
HPM5-S-225M-3000-45-A-GS	45	3000	78.0	96.4%	0.96	200	143	210
HPM5-S-250M-3000-55-A-GS	55	3000	95.2	96.5%	0.96	200	175	351
HPM5-S-280S-3000-75-A-GS	75	3000	130	96.6%	0.96	200	239	370
HPM5-S-280M-3000-90-A-GS	90	3000	155	96.7%	0.96	200	287	392
HPM5-S-315S-3000-110-A-GS	110	3000	190	96.8%	0.96	200	350	621
HPM5-S-315ML-3000-132-A-GS	132	3000	228	96.9%	0.96	200	420	660
HPM5-S-315ML-3000-160-A-GS	160	3000	276	97.0%	0.96	200	509	683
HPM5-S-315ML-3000-200-A-GS	200	3000	344	97.2%	0.96	200	637	722
HPM5-S-355ML-3000-250-A-GS	250	3000	430	97.2%	0.96	200	796	1040
HPM5-S-355ML-3000-280-A-GS	280	3000	481	97.2%	0.96	200	891	1074
HPM5-S-355ML-3000-315-A-GS	315	3000	541	97.2%	0.96	200	1003	1109
HPM5-S-355ML-3000-355-A-GS	355	3000	610	97.2%	0.96	200	1130	1143
HPM5-S-355ML-3000-400-A-GS	400	3000	687	97.2%	0.96	200	1273	1195
HPM5-S-355ML-3000-450-A-GS	450	3000	773	97.2%	0.96	200	1433	1247
HPM5-S-355ML-3000-500-A-GS	500	3000	859	97.2%	0.96	200	1592	1298
HPM5-S-355ML-3000-560-A-GS	560	3000	962	97.2%	0.96	200	1783	1384
HPM5-S-355ML-3000-630-A-GS	630	3000	1083	97.2%	0.96	200	2006	1470

Selection technical data

Standard frame size
Synchronized speed: 1500 RPM 380V

IE5 efficiency class according to IEC
TS 60034-30-2 and GB 30253-2013 (90kW and below)

IE5

Motor type	Rated Power kW	Rated speed r/min	Rated Current A	Efficiency (100%)	Power Factor Cosφ	Frequency Hz	Rated Torque N.m	Weight Kg
HPM5-S-112M-1500-4-A-GS	4	1500	7.28	91.8%	0.96	75	25.5	34
HPM5-S-132S-1500-5.5-A-GS	5.5	1500	9.93	92.5%	0.96	100	35.0	58
HPM5-S-132M-1500-7.5-A-GS	7.5	1500	13.4	93.2%	0.96	100	47.8	69
HPM5-S-160M-1500-11-A-GS	11	1500	19.6	93.8%	0.96	100	70.0	151
HPM5-S-160L-1500-15-A-GS	15	1500	26.5	94.4%	0.96	100	95.5	168
HPM5-S-180M-1500-18.5-A-GS	18.5	1500	32.7	94.6%	0.96	100	118	163
HPM5-S-180L-1500-22-A-GS	22	1500	38.7	94.9%	0.96	100	140	176
HPM5-S-200L-1500-30-A-GS	30	1500	52.6	95.3%	0.96	100	191	177
HPM5-S-225S-1500-37-A-GS	37	1500	64.7	95.5%	0.96	100	236	214
HPM5-S-225M-1500-45-A-GS	45	1500	78.5	95.8%	0.96	100	287	226
HPM5-S-250M-1500-55-A-GS	55	1500	95.7	96.0%	0.96	100	350	386
HPM5-S-280S-1500-75-A-GS	75	1500	130	96.2%	0.96	100	478	386
HPM5-S-280M-1500-90-A-GS	90	1500	156	96.5%	0.96	100	573	408
HPM5-S-315S-1500-110-A-GS	110	1500	189	97.0%	0.96	100	700	700
HPM5-S-315ML-1500-132-A-GS	132	1500	227	97.1%	0.96	100	840	738
HPM5-S-315ML-1500-160-A-GS	160	1500	275	97.2%	0.96	100	1019	793
HPM5-S-315ML-1500-200-A-GS	200	1500	343	97.4%	0.96	100	1273	840
HPM5-S-355ML-1500-250-A-GS	250	1500	429	97.4%	0.96	100	1592	1265
HPM5-S-355ML-1500-280-A-GS	280	1500	480	97.4%	0.96	100	1783	1315
HPM5-S-355ML-1500-315-A-GS	315	1500	540	97.4%	0.96	100	2006	1382
HPM5-S-355ML-1500-355-A-GS	355	1500	609	97.4%	0.96	100	2260	1505
HPM5-S-355ML-1500-400-A-GS	400	1500	686	97.4%	0.96	100	2547	1596

Selection technical data

Standard frame size
Synchronized speed: 1000 RPM 380V

IE5 efficiency class according to IEC
TS 60034-30-2 and GB 30253-2013 (90kW and below)

IE5

Motor type	Rated Power kW	Rated speed r/min	Rated Current A	Efficiency (100%)	Power Factor Cosφ	Frequency Hz	Rated Torque N.m	Weight Kg
HPM5-S-132M-1000-4-A-GS	4	1000	7.21	92.7%	0.96	66.67	38.2	69
HPM5-S-132M-1000-5.5-A-GS	5.5	1000	9.84	93.4%	0.96	66.67	52.5	76
HPM5-S-160M-1000-7.5-A-GS	7.5	1000	13.3	94.0%	0.96	66.67	71.6	162
HPM5-S-160L-1000-11-A-GS	11	1000	19.4	94.5%	0.96	66.67	105	177
HPM5-S-180L-1000-15-A-GS	15	1000	26.4	94.9%	0.96	66.67	143	178
HPM5-S-200L-1000-18.5-A-GS	18.5	1000	32.4	95.3%	0.96	66.67	177	172
HPM5-S-200L-1000-22-A-GS	22	1000	38.4	95.6%	0.96	66.67	210	182
HPM5-S-225M-1000-30-A-GS	30	1000	52.3	95.8%	0.96	66.67	287	226
HPM5-S-250M-1000-37-A-GS	37	1000	64.4	96.0%	0.96	66.67	353	386
HPM5-S-280S-1000-45-A-GS	45	1000	78.1	96.2%	0.96	100	430	386
HPM5-S-280M-1000-55-A-GS	55	1000	95.4	96.3%	0.96	100	525	408
HPM5-S-315S-1000-75-A-GS	75	1000	130	96.4%	0.96	100	716	683
HPM5-S-315ML-1000-90-A-GS	90	1000	156	96.5%	0.96	100	860	722
HPM5-S-315ML-1000-110-A-GS	110	1000	190	96.6%	0.96	100	1051	762
HPM5-S-315ML-1000-132-A-GS	132	1000	228	96.7%	0.96	100	1261	814
HPM5-S-355ML-1000-160-A-GS	160	1000	276	96.8%	0.96	100	1528	1202
HPM5-S-355ML-1000-200-A-GS	200	1000	344	97.0%	0.96	100	1910	1305
HPM5-S-355ML-1000-250-A-GS	250	1000	431	97.0%	0.96	100	2388	1443

Selection technical data

Standard frame size
Synchronized speed: 750 RPM 380V

IE5 efficiency class according to IEC
TS 60034-30-2 and GB 30253-2013 (90kW and below)

IE5

Motor type	Rated Power kW	Rated speed r/min	Rated Current A	Efficiency (100%)	Power Factor Cosφ	Frequency Hz	Rated Torque N.m	Weight Kg
HPM5-S-160M-750-4-A-GS	4	750	7.41	90.2%	0.96	50	50.9	152
HPM5-S-160M-750-5.5-A-GS	5.5	750	10.1	90.9%	0.96	50	70.0	162
HPM5-S-160L-750-7.5-A-GS	7.5	750	13.7	91.5%	0.96	50	95.5	182
HPM5-S-180L-750-11-A-GS	11	750	19.8	92.7%	0.96	50	140	176
HPM5-S-200L-750-15-A-GS	15	750	26.9	93.3%	0.96	50	191	177
HPM5-S-225S-750-18.5-A-GS	18.5	750	32.9	94.0%	0.96	50	236	218
HPM5-S-225M-750-22-A-GS	22	750	38.9	94.5%	0.96	50	280	234
HPM5-S-250M-750-30-A-GS	30	750	52.9	94.7%	0.96	50	382	408
HPM5-S-280S-750-37-A-GS	37	750	65.1	95.0%	0.96	75	471	395
HPM5-S-280M-750-45-A-GS	45	750	79.0	95.2%	0.96	75	573	416
HPM5-S-315S-750-55-A-GS	55	750	96.3	95.4%	0.96	75	700	683
HPM5-S-315ML-750-75-A-GS	75	750	131	95.6%	0.96	75	955	738
HPM5-S-315ML-750-110-A-GS	110	750	192	95.6%	0.96	75	1401	840
HPM5-S-315ML-750-90-A-GS	90	750	157	95.7%	0.96	75	1146	793
HPM5-S-355ML-750-132-A-GS	132	750	230	95.9%	0.96	75	1681	1237
HPM5-S-355ML-750-160-A-GS	160	750	278	96.1%	0.96	75	2037	1339
HPM5-S-355ML-750-200-A-GS	200	750	347	96.3%	0.96	75	2547	1477

Selection technical data

HPM smaller frame size
Synchronized speed: 3000 RPM 380V

IE5 efficiency class according to IEC
TS 60034-30-2 and GB 30253-2013 (90kW and below)

IE5

Motor type	Rated Power kW	Rated speed r/min	Rated Current A	Efficiency (100%)	Power Factor Cosφ	Frequency Hz	Rated Torque N.m	Weight Kg
HPM5-S-112M-3000-4-A-GS	4	3000	7.16	93.3%	0.96	150	12.7	32
HPM5-S-112M-3000-5.5-A-GS	5.5	3000	9.77	94.0%	0.96	150	17.5	33
HPM5-S-112M-3000-7.5-A-GS	7.5	3000	13.3	94.5%	0.96	150	23.9	34
HPM5-S-160M-3000-11-A-GS	11	3000	19.3	95.0%	0.96	200	35.0	138
HPM5-S-160M-3000-15-A-GS	15	3000	26.3	95.3%	0.96	200	47.8	143
HPM5-S-160M-3000-18.5-A-GS	18.5	3000	32.3	95.6%	0.96	200	58.9	143
HPM5-S-160M-3000-22-A-GS	22	3000	38.3	95.9%	0.96	200	70.0	151
HPM5-S-160M-3000-30-A-GS	30	3000	52.2	96.1%	0.96	200	95.5	177
HPM5-S-160M-3000-37-A-GS	37	3000	64.2	96.3%	0.96	200	118	190
HPM5-S-180M-3000-45-A-GS	45	3000	78.0	96.4%	0.96	200	143	184
HPM5-S-180M-3000-55-A-GS	55	3000	95.2	96.5%	0.96	200	175	192
HPM5-S-200L-3000-75-A-GS	75	3000	130	96.6%	0.96	200	239	200
HPM5-S-200L-3000-90-A-GS	90	3000	155	96.7%	0.96	200	287	213
HPM5-S-250M-3000-110-A-GS	110	3000	190	96.8%	0.96	200	350	413
HPM5-S-250M-3000-132-A-GS	132	3000	228	96.9%	0.96	200	420	424
HPM5-S-250M-3000-160-A-GS	160	3000	276	97.0%	0.96	200	509	474
HPM5-S-280S-3000-200-A-GS	200	3000	344	97.2%	0.96	200	637	500
HPM5-S-280M-3000-250-A-GS	250	3000	430	97.2%	0.96	200	796	592
HPM5-S-280M-3000-280-A-GS	280	3000	481	97.2%	0.96	200	891	629
HPM5-S-280M1-3000-315-A-GS	315	3000	541	97.2%	0.96	200	1003	672
HPM5-S-280M1-3000-355-A-GS	355	3000	610	97.2%	0.96	200	1130	709
HPM5-S-280M1-3000-400-A-GS	400	3000	687	97.2%	0.96	200	1273	756
HPM5-S-315ML-3000-450-A-GS	450	3000	773	97.2%	0.96	200	1433	973
HPM5-S-315ML-3000-500-A-GS	500	3000	859	97.2%	0.96	200	1592	1010
HPM5-S-355ML-3000-560-A-GS	560	3000	962	97.2%	0.96	200	1783	1384
HPM5-S-355ML-3000-630-A-GS	630	3000	1083	97.2%	0.96	200	2006	1470

Selection technical data

HPM smaller frame size
Synchronized speed: 1500 RPM 380V

IE5 efficiency class according to IEC
TS 60034-30-2 and GB 30253-2013 (90kW and below)

IE5

Motor type	Rated Power kW	Rated speed r/min	Rated Current A	Efficiency (100%)	Power Factor Cosφ	Frequency Hz	Rated Torque N.m	Weight Kg
HPM5-S-112M-1500-4-A-GS	4	1500	7.28	91.8%	0.96	75	25.5	34
HPM5-S-112M-1500-5.5-A-GS	5.5	1500	9.93	92.5%	0.96	75	35.0	36
HPM5-S-132M-1500-7.5-A-GS	7.5	1500	13.4	93.2%	0.96	100	47.8	69
HPM5-S-160M-1500-11-A-GS	11	1500	19.6	93.8%	0.96	100	70.0	151
HPM5-S-160M-1500-15-A-GS	15	1500	26.5	94.4%	0.96	100	95.5	168
HPM5-S-160L-1500-18.5-A-GS	18.5	1500	32.7	94.6%	0.96	100	118	181
HPM5-S-160L-1500-22-A-GS	22	1500	38.7	94.9%	0.96	100	140	190
HPM5-S-160L-1500-30-A-GS	30	1500	52.6	95.3%	0.96	100	191	211
HPM5-S-180M-1500-37-A-GS	37	1500	64.7	95.5%	0.96	100	236	216
HPM5-S-180M-1500-45-A-GS	45	1500	78.5	95.8%	0.96	100	287	240
HPM5-S-200L-1500-55-A-GS	55	1500	95.7	96.0%	0.96	100	350	213
HPM5-S-250M-1500-75-A-GS	75	1500	130	96.2%	0.96	100	478	358
HPM5-S-250M-1500-90-A-GS	90	1500	156	96.5%	0.96	100	573	372
HPM5-S-250M-1500-110-A-GS	110	1500	189	97.0%	0.96	100	700	471
HPM5-S-250M-1500-132-A-GS	132	1500	227	97.1%	0.96	100	840	510
HPM5-S-280M-1500-160-A-GS	160	1500	275	97.2%	0.96	100	1019	542
HPM5-S-280M-1500-200-A-GS	200	1500	343	97.4%	0.96	100	1273	607
HPM5-S-280M1-1500-250-A-GS	250	1500	429	97.4%	0.96	100	1592	697
HPM5-S-315ML-1500-280-A-GS	280	1500	480	97.4%	0.96	100	1783	995
HPM5-S-315ML-1500-315-A-GS	315	1500	540	97.4%	0.96	100	2006	1048
HPM5-S-315ML-1500-355-A-GS	355	1500	609	97.4%	0.96	100	2260	1100
HPM5-S-355ML-1500-400-A-GS	400	1500	686	97.4%	0.96	100	2547	1596
HPM5-S-355ML-1500-450-A-GS	450	1500	772	97.4%	0.96	100	2865	1702
HPM5-S-355ML-1500-500-A-GS	500	1500	858	97.4%	0.96	100	3183	1809

Selection technical data

HPM smaller frame size
Synchronized speed: 1000 RPM 380V

IE5 efficiency class according to IEC
TS 60034-30-2 and GB 30253-2013 (90kW and below)

IE5

Motor type	Rated Power kW	Rated speed r/min	Rated Current A	Efficiency (100%)	Power Factor Cosφ	Frequency Hz	Rated Torque N.m	Weight Kg
HPM5-S-132M-1000-4-A-GS	4	1000	7.21	92.7%	0.96	66.67	38.2	69
HPM5-S-132M-1000-5.5-A-GS	5.5	1000	9.84	93.4%	0.96	66.67	52.5	76
HPM5-S-160M-1000-7.5-A-GS	7.5	1000	13.3	94.0%	0.96	66.67	71.6	162
HPM5-S-160M-1000-11-A-GS	11	1000	19.4	94.5%	0.96	66.67	105	177
HPM5-S-160L-1000-15-A-GS	15	1000	26.4	94.9%	0.96	66.67	143	190
HPM5-S-160L-1000-18.5-A-GS	18.5	1000	32.4	95.3%	0.96	66.67	177	200
HPM5-S-180M-1000-22-A-GS	22	1000	38.4	95.6%	0.96	66.67	210	211
HPM5-S-180M-1000-30-A-GS	30	1000	52.3	95.8%	0.96	66.67	287	240
HPM5-S-200L-1000-37-A-GS	37	1000	64.4	96.0%	0.96	66.67	353	213
HPM5-S-250M-1000-45-A-GS	45	1000	78.1	96.2%	0.96	66.67	430	413
HPM5-S-250M-1000-55-A-GS	55	1000	95.4	96.3%	0.96	66.67	525	424
HPM5-S-250M-1000-75-A-GS	75	1000	130	96.4%	0.96	66.67	716	490
HPM5-S-280S-1000-90-A-GS	90	1000	156	96.5%	0.96	100	860	469
HPM5-S-280M-1000-110-A-GS	110	1000	190	96.6%	0.96	100	1051	523
HPM5-S-280M-1000-132-A-GS	132	1000	228	96.7%	0.96	100	1261	560
HPM5-S-280M1-1000-160-A-GS	160	1000	276	96.8%	0.96	100	1528	623
HPM5-S-280M1-1000-200-A-GS	200	1000	344	97.0%	0.96	100	1910	697
HPM5-S-315ML-1000-250-A-GS	250	1000	431	97.0%	0.96	100	2388	1076
HPM5-S-315ML-1000-280-A-GS	280	1000	482	97.0%	0.96	100	2674	1141
HPM5-S-355ML-1000-315-A-GS	315	1000	543	97.0%	0.96	100	3008	1632
HPM5-S-355ML-1000-355-A-GS	355	1000	611	97.0%	0.96	100	3390	1735
HPM5-S-355ML-1000-400-A-GS	400	1000	689	97.0%	0.96	100	3820	1877

Selection technical data

HPM smaller frame size
Synchronized speed: 750 RPM 380V

IE5 efficiency class according to IEC
TS 60034-30-2 and GB 30253-2013 (90kW and below)

IE5

Motor type	Rated Power kW	Rated speed r/min	Rated Current A	Efficiency (100%)	Power Factor Cosφ	Frequency Hz	Rated Torque N.m	Weight Kg
HPM5-S-160M-750-4-A-GS	4	750	7.41	90.2%	0.96	50	50.9	152
HPM5-S-160M-750-5.5-A-GS	5.5	750	10.1	90.9%	0.96	50	70.0	162
HPM5-S-160M-750-7.5-A-GS	7.5	750	13.7	91.5%	0.96	50	95.5	172
HPM5-S-160L-750-11-A-GS	11	750	19.8	92.7%	0.96	50	140	194
HPM5-S-180M-750-15-A-GS	15	750	26.9	93.3%	0.96	50	191	192
HPM5-S-180M-750-18.5-A-GS	18.5	750	32.9	94.0%	0.96	50	236	216
HPM5-S-180M-750-22-A-GS	22	750	38.9	94.5%	0.96	50	280	240
HPM5-S-200L-750-30-A-GS	30	750	52.9	94.7%	0.96	50	382	240
HPM5-S-250M-750-37-A-GS	37	750	65.1	95.0%	0.96	50	471	408
HPM5-S-250M-750-45-A-GS	45	750	79.0	95.2%	0.96	50	573	450
HPM5-S-250M-750-55-A-GS	55	750	96.3	95.4%	0.96	50	700	481
HPM5-S-280S-750-75-A-GS	75	750	131	95.6%	0.96	75	955	487
HPM5-S-280M-750-90-A-GS	90	750	157	95.6%	0.96	75	1146	542
HPM5-S-280M-750-110-A-GS	110	750	192	95.7%	0.96	75	1401	588
HPM5-S-280M1-750-132-A-GS	132	750	230	95.9%	0.96	75	1681	660
HPM5-S-280M1-750-160-A-GS	160	750	278	96.1%	0.96	75	2037	724
HPM5-S-315ML-750-200-A-GS	200	750	347	96.3%	0.96	75	2547	1102
HPM5-S-355ML-750-250-A-GS	250	750	434	96.3%	0.96	75	3183	1666
HPM5-S-355ML-750-280-A-GS	280	750	486	96.3%	0.96	75	3565	1589

Variant code

Variant Group	Variant Code	Description	112	132	160	180	200	225	250	280	315	355	NOTE
Mounting Arrangement A	A01	IMB3	S	S	S	S	S	S	S	S	S	S	As Standard
	A02	IMB5	P	P	P	P	P	P	P	P	P	P	
	A03	IMV1	P	P	P	P	P	P	P	P	P	P	(1)
	A04	IMB35	P	P	P	P	P	P	P	P	P	P	Round Flange
	A05	IMB14	P	P	P	NA	NA	NA	NA	NA	NA	NA	
	A06	IMB34	P	P	P	NA	NA	NA	NA	NA	NA	NA	
	A07	Other moutnging arrangement	R	R	R	R	R	R	R	R	R	R	
Insulation C	C01	Insulation Class F	S	S	S	S	S	S	S	S	S	S	As Standard
	C02	Insulation Class H	R	R	R	R	R	R	R	R	R	R	
Shaft E	E01	Two shaft extensions according to catalog drawings	P	P	P	P	P	P	P	P	P	P	
	E02	Shaft extension with closed keyway	S	S	S	S	S	S	S	S	S	S	As Standard
	E03	Shaft extension with threaded holes	S	S	S	S	S	S	S	S	S	S	(2)
	E04	Special shaft extension at D-End, standard shaft material	R	R	R	R	R	R	R	R	R	R	
	E05	Special shaft extension at N-End, standard shaft material	R	R	R	R	R	R	R	R	R	R	
	E06	Stanless steel shaft (standard or non-standard design)	R	R	R	R	R	R	R	R	R	R	
	E07	Open keyway	P	P	P	P	P	P	P	P	P	P	B Keyway
Protection F	F01	Protection level IP55	S	S	S	S	S	S	S	S	S	S	As Standard
	F02	Protection level IP56	P	P	P	P	P	P	P	P	P	P	
	F03	Protection level IP65	P	P	P	P	P	P	P	P	P	P	
	F04	Drain hole with plug	P	P	P	P	P	P	P	P	P	P	(3)
	F05	External Earthing	P	P	P	P	P	P	P	P	P	P	
	F06	Stanless steel bolts(304#)	P	P	P	P	P	P	P	P	P	P	
	F08	Radial seal at D-end.	P	P	P	P	P	P	P	P	P	P	Oil Seal
	F09	TH design	R	R	R	R	R	R	R	R	R	R	
	F11	WF1 design	R	R	R	R	R	R	R	R	R	R	
	F12	WF2 design	R	R	R	R	R	R	R	R	R	R	
	F13	Protection level IP66	R	R	R	R	R	R	R	R	R	R	
	F14	Moisture-proof treatment for stator and rotor core	R	R	R	R	R	R	R	R	R	R	(3)

S = Included as standard
R = On request
NA = Not applicable
P = Applicable

(1) Rain cap included by default. please note if you don't need it.

(2) As standard. Size and depth acc. to dimension drawing.

(3) Recommend if used under moisture environment.

Variant code

Variant Group	Variant Code	Description	112	132	160	180	200	225	250	280	315	355	NOTE
Bearing and grease G	G01	Roller bearing at D-end	NA	NA	P	P	P	P	P	P	P	P	(1)
	G02	Sealed bearings	S	S	S	P	P	P	R	R	R	R	(2)
	G03	Heat-resistant grease	R	R	R	R	R	R	R	R	R	R	(3)
	G04	Cold-resistant grease	P	P	P	P	P	P	P	P	P	P	(4)
	G05	Transport lock for bearings	NA	NA	P	P	P	P	P	P	P	P	
	G06	Pt100 3-wire in bearings	NA	NA	P	P	P	P	P	P	P	P	(5)
	G07	Pt100 2-wire in bearings	NA	NA	P	P	P	P	P	P	P	P	(5)
	G08	SKF bearing	P	P	P	P	P	P	P	P	P	P	(6)
	G09	Angular contact bearing at D-end, shaft force away from bearing	NA	NA	R	R	R	R	R	R	R	R	(7)
	G10	Angular contact bearing at N-end, shaft force towards bearing	NA	NA	R	R	R	R	R	R	R	R	(7)
	G11	63-series bearing	S	S	S	S	S	S	S	S	S	S	As Standard
	G13	Reserve for SPM compatible nipples place for vibration measurement	NA	NA	P	P	P	P	P	P	P	P	(8)
	G14	Bearings regreasable via grease nipples	NA	NA	P	S	S	S	S	S	S	S	As Standard
Terminal box H	H01	Terminal box at top	S	S	S	S	S	S	S	S	S	S	As Standard
	H02	Cable entry from D-end	P	P	P	P	P	P	P	P	P	P	(9)
	H03	Cable entry from N-end	P	P	P	P	P	P	P	P	P	P	(10)
	H04	Cable entry LHS (seen from D-end)	P	P	P	P	P	P	P	P	P	P	
	H05	Special terminal box	R	R	R	R	R	R	R	R	R	R	
	H06	Terminal box RHS(seen from D-end)	P	P	P	P	P	P	P	P	P	P	
	H07	Terminal box LHS (seen from D-end)	P	P	P	P	P	P	P	P	P	P	
	H08	Flying leads with standard length,no terminal box	P	P	P	P	P	P	P	P	P	P	(11)
	H09	Flying leads with special length,no terminal box	R	R	R	R	R	R	R	R	R	R	
	H10	Special extended cable,no terminal box	R	R	R	R	R	R	R	R	R	R	
	H11	Another set of standard terminal box attached	P	P	P	P	P	P	P	P	P	P	
	H12	Separate terminal box for auxiliaries	NA	NA	P	P	P	P	P	P	P	P	(12)
	H13	EMC cable gland	R	R	R	R	R	R	R	R	R	R	
	H14	Two standard metal cable glands	P	P	P	P	P	P	P	P	P	P	Nickel plated copper
	H15	Two standard plastic cable glands	S	S	S	S	S	S	S	S	S	S	As Standard
	H16	Two standard stainless steel cable glands	R	R	R	R	R	R	R	R	R	R	
	H17	Terminal box at N-end	P	P	P	P	P	P	P	P	P	P	(7)
	H19	Reserve non-standard cable entry	R	R	R	R	R	R	R	R	R	R	(7)
	H20	One standard metal cable glands	P	P	P	P	P	P	P	P	P	P	Nickel plated copper

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(1) Recommend to order G05 for at the same time, otherwise, there may be damage during transportation..
(2) 2Z sealing as standard.
(3) Heat resistant +160°C, otherwise technical confirmation needed.
(4) Code resistant -40°C, otherwise technical confirmation needed.
(5) One at D-end and one at N-end, wire leads in the main terminal box, For 160-225, wire leads without terminals as standard. For 250 and above, wire leads without terminals as standard if the main terminal box does not have enough room for terminals and separate terminal box is not ordered.
(6) Technical confirmation needed if not standard bearing type, sealing and grease.
(7) Technical confirmation needed.
(8) One at D-end and one at N-end.
(9) Cable entry may over flange or shaft shoulder. Recommend to order H17 for at the same time.
(10) 112-132 Cable entry may interfere with lifting lug. Technical confirmation needed.
(11) Flying leads length(from the cover): 500mm for 90 and below, 1000mm for 100-160, 1500mm for 180 and above.
(12) Electronic control parts are put in separate terminal box, electric control parts are put in main terminal box.

Variant code

Variant Group	Variant Code	Description	112	132	160	180	200	225	250	280	315	355	NOTE
Certificate J	J12	CE Label	S	S	S	S	S	S	S	S	S	S	As Standard
Cooling system K	K01	Plastic Fan	S	S	S	S	S	S	S	S	S	S	As Standard
	K02	Aluminum alloy fan	P	P	P	P	P	P	P	P	P	P	
	K03	Without fan and fan cover	P	P	P	P	P	P	P	P	P	P	(1)
	K04	Separate cooling fan	P	P	P	P	P	P	P	P	P	P	(2)
Cooling System L	L01	Bimetal detectors, break type (NCC), (3 in series), 150°C, in stator winding	R	R	R	R	R	R	R	R	R	R	
	L02	Bimetal detectors, break type (NCC), (3 in series), 170°C, in stator winding	R	R	R	R	R	R	R	R	R	R	
	L03	Pt100 2-wire in stator winding, 1 per phase	P	P	P	P	P	P	P	P	P	P	(3)
	L04	Pt100 2-wire in stator winding, 2 per phase	P	P	P	P	P	P	P	P	P	P	(3)
	L05	Pt100 3-wire in stator winding, 1 per phase	P	P	P	P	P	P	P	P	P	P	(3)
	L06	Pt100 3-wire in stator winding, 2 per phase	P	P	P	P	P	P	P	P	P	P	(3)
	L07	PTC - thermistors (3 in series), 150°C, in stator winding	R	R	R	R	R	R	R	R	R	R	
	L08	PTC - thermistors (3 in series), 170°C, in stator winding	R	R	R	R	R	R	R	R	R	R	
	L11	PTC - thermistors (2x3 in series), 150°C, in stator winding	R	R	R	R	R	R	R	R	R	R	
	L12	PTC - thermistors (2x3 in series), 1x150°C+1x170°C, in stator winding	R	R	R	R	R	R	R	R	R	R	
	L13	PTC - thermistors (1x3 in series), 130°C, in stator winding	S	S	S	S	S	S	S	S	S	S	As Standard
	L14	Temperature switch（NC，1x3 in series, 130°C）	R	R	R	R	R	R	R	R	R	R	
Rating and identification plate M	M01	Restamping voltage, frequency, output or duty	R	R	R	R	R	R	R	R	R	R	(4)
	M02	Mounting of additional identification plate, stainless steel	P	P	P	P	P	P	P	P	P	P	(4)
	M03	Additional rating plate delivered loose	P	P	P	P	P	P	P	P	P	P	(4)
Test N	N01	Type test report from a catalogue motor, (380V,50HZ)	R	R	R	R	R	R	R	R	R	R	
	N02	Type test with report for one motor from specific delivery batch	P	P	P	P	P	P	P	P	P	P	
	N03	Routine test report	P	P	P	P	P	P	P	P	P	P	
	N04	Vibration level test	P	P	P	P	P	P	P	P	P	P	(4)
	N05	Noise level test	P	P	P	P	P	P	P	P	P	P	(4)
Package P	P01	Export wooden box packaging	P	P	P	P	P	P	P	P	P	P	
Balancing Q	Q01	Full-key balancing	P	P	P	P	P	P	P	P	P	P	
	Q02	Half key balancing	S	S	S	S	S	S	S	S	S	S	As Standard
	Q03	Balanced without key	P	P	P	P	P	P	P	P	P	P	
	Q04	Vibration class B	P	P	P	P	P	P	P	P	P	P	

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(1) Cooling method IC418 as standard. The motor is cooled by the customer's equipment. It is customer's reponsiblity to provide enough ventilation and cooling for motor. Otherwise technical confirmation needed.
(2) 380V 50Hz fan motor as standard. Fan motor voltage and frequency is the same as main motor. If the main motor has multiple voltage and frequency, fan motor voltage and frequency should be provided when ordered.
(3) Wire leads in the main terminal box as standard. If H12 is ordered, wire leads into separate terminal box. For 80-225, wire leads without terminals as standard.
(4) Technical confirmation needed.

Variant code

Variant Group	Variant Code	Description	112	132	160	180	200	225	250	280	315	355	NOTE
Heating Element	R01	Heating Element 110-120V	P	P	P	P	P	P	P	P	P	P	
R	R02	Heating Element 220-240V	P	P	P	P	P	P	P	P	P	P	
Painting	T01	Primer paint only	P	P	P	P	P	P	P	P	P	P	
T	T02	Special paint color, standard grade	P	P	P	P	P	P	P	P	P	P	(1)
	T03	Paint thickness report	P	P	P	P	P	P	P	P	P	P	(1)
Varible speed	V04	VSD rating plate data according to request	R	R	R	R	R	R	R	R	R	R	(2)
drives	V06	Assembly of encoder	R	R	R	R	R	R	R	R	R	R	(3)
V	V07	Insulated bearing at N-end	NA	NA	NA	NA	R	R	P	P	P	P	
	V08	Reserve for encoder installation position	R	R	R	R	R	R	R	R	R	R	(3)
Warranty W	W01	Warranty Extension	R	R	R	R	R	R	R	R	R	R	
Others U	U00	Other requirements	R	R	R	R	R	R	R	R	R	R	(1)

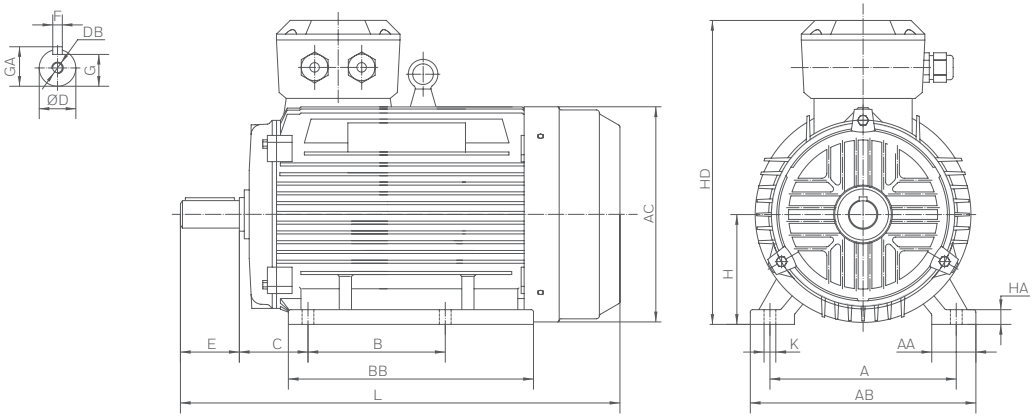
S = Included as standard
R = On request
NA = Not applicable
P = Applicable

(1) Technical confirmation needed.
(2) Applicable to non-standard out power, voltage, speed range and so on. Technical confirmation needed. Specific requirements (such as rated power, voltage, frequency, frequency range, torque/power characteristics, cooling method, etc.) is required when ordered. Separate fan voltage and frequency is same as main motor as standard if not provided.
(3) Technical confirmation needed. Specific encoder model type should be provided.

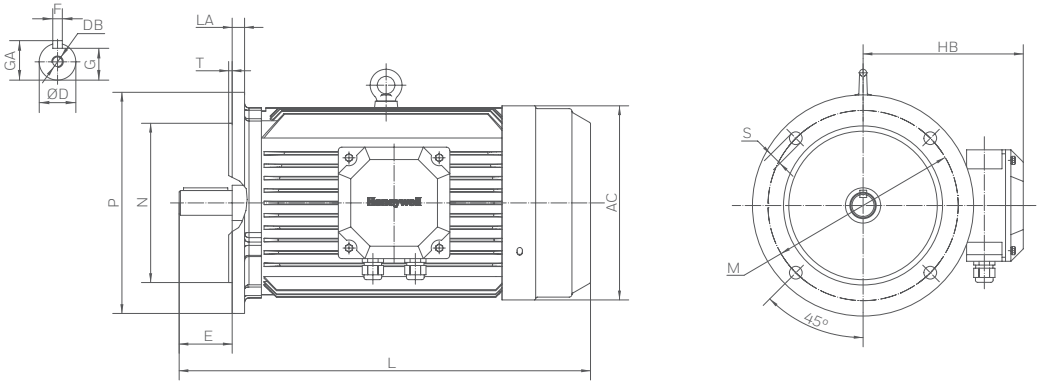
Dimension drawings

Frame size HPM5-112~132

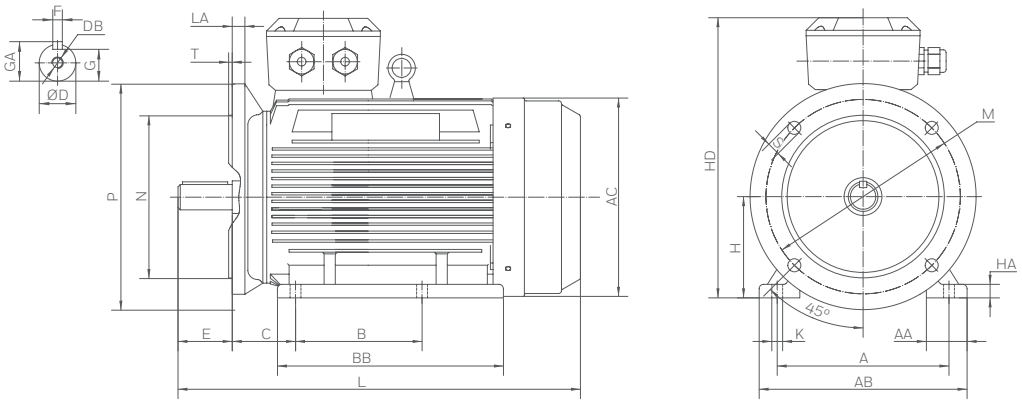
Foot-mounted motor IMB3



Large flange mounted motors IMB5, IMV1, IMV3



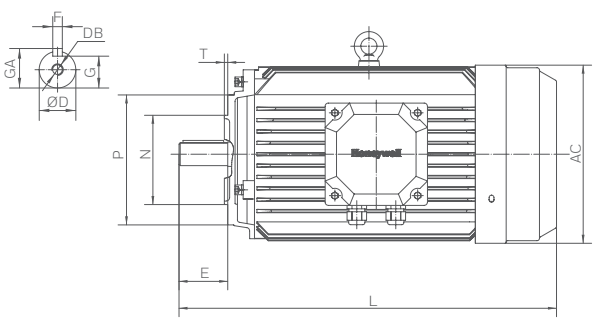
Foot-and flanged-mounted motor IMB35

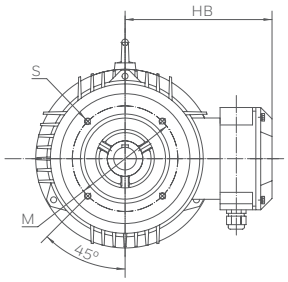


Dimension drawings

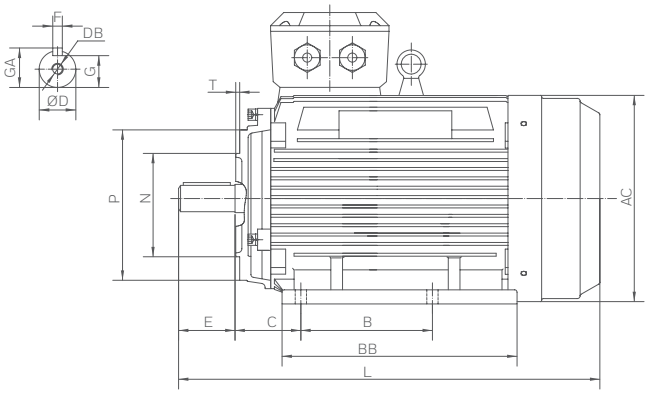
Frame size HPM5-112~132

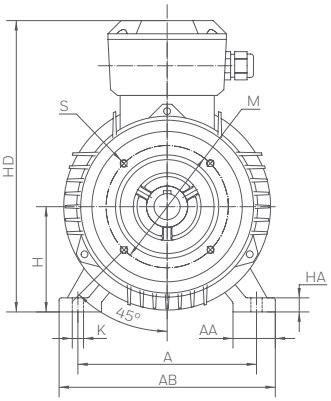
Small flange mounted motor IMB14





Foot and small flange installation motor IMB34





IMB3; IMB35; IMB34

Frame Size	A	AA	AB	AC	B	BB	C	D	DB	E	F	G	GA	H	K	HA	HD	L
112	190	45	226	220	140	180	70	28	M10	60	8	24	31	112	12	15	315	400
132S	216	55	262	260	140	186	89	38	M12	80	10	33	41	132	12	18	355	470
132M	216	55	262	260	178	224	89	38	M12	80	10	33	41	132	12	18	355	510

IMB5, IMV1, IMV3; IMB35

Frame Size	HB	LA	M	N	P	S	T
112	203	14	215	180	250	14.5	4
132	223	14	265	230	300	14.5	4

IMB14; IMB34

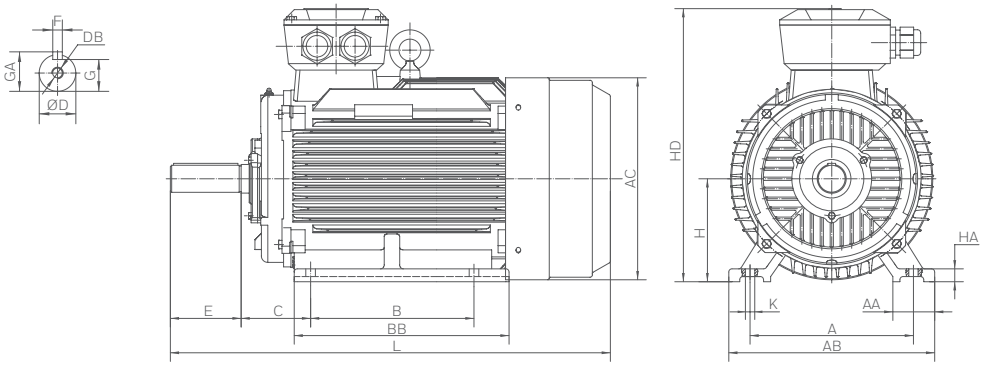
Frame Size	HB	M	N	P	S	T
112	203	130	110	160	M8	4
132	223	165	130	200	M10	4

Remark: When motor shaft is mounted towards down, the total length L does not cover the additional raincover length.

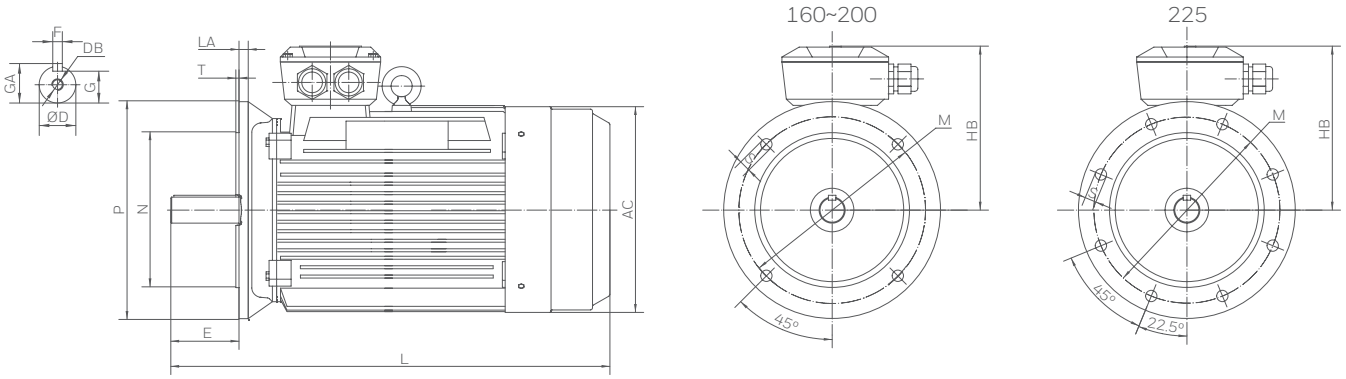
Dimension drawings

Frame size HPM5-160~225

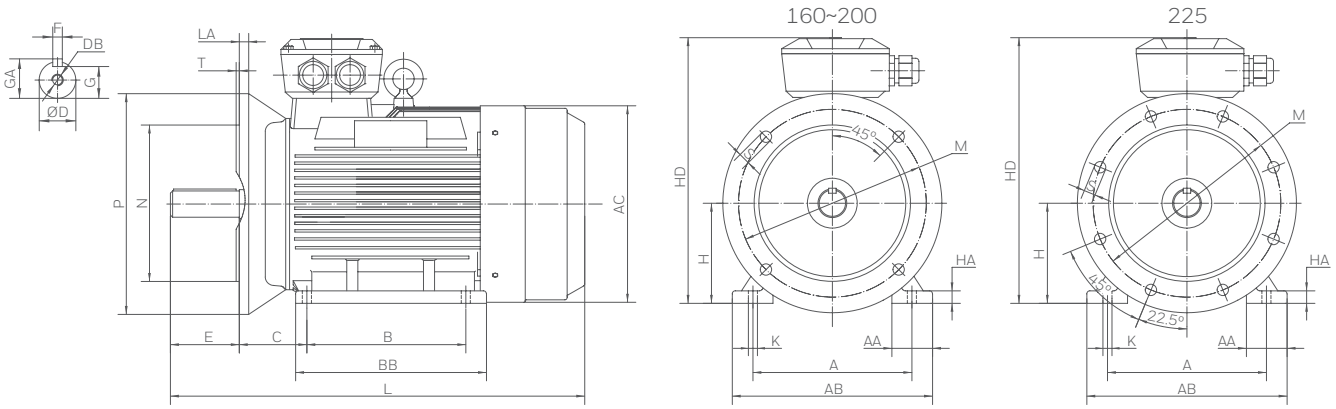
Foot-mounted motor IMB3



Large flange mounted motors IMB5, IMV1, IMV3



Foot-and flanged-mounted motor IMB35



Dimension drawings

Frame size HPM5-160~225

IMB3, IMB6, IMB7, IMB8, IMV5, IMV6; IMB35, IMV15, IMV36

Frame Size	Speed r/min	A	AA	AB	AC	B	BB	C	D	DB	E	F	G	GA	H	K	HA	HD	L
160M	750~3000	254	65	314	315	210	260	108	42	M16	110	12	37	45	160	14.5	20	435	625
160L	750~3000	254	65	314	315	254	304	108	42	M16	110	12	37	45	160	14.5	20	435	670
180M	750~3000	279	70	349	355	241	311	121	48	M16	110	14	42.5	51.5	180	14.5	22	470	700
180L	750~3000	279	70	349	355	279	349	121	48	M16	110	14	42.5	51.5	180	14.5	22	470	735
200L	750~3000	318	70	388	400	305	369	133	55	M20	110	16	49	59	200	18.5	25	525	775
225S	750~1500	356	91	430	400	286	390	149	60	M20	140	18	53	64	225	18.5	50	550	805
225M	3000	356	91	430	400	311	390	149	55	M20	110	16	49	59	225	18.5	50	550	775
225M	750~1500	356	91	430	400	311	390	149	60	M20	140	18	53	64	225	18.5	50	550	805

IMB5, IMV1, IMV3; IMB35, IMV15, IMV36

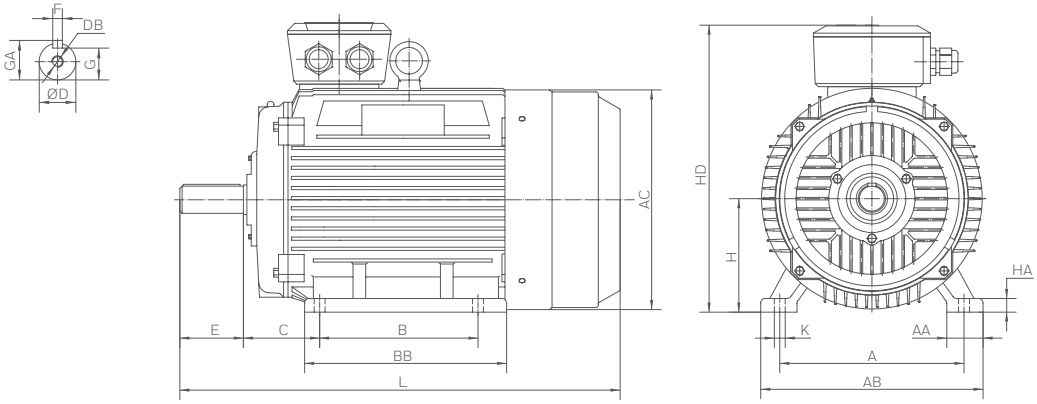
Frame Size	Speed r/min	HB	LA	M	N	P	S	T
160M	750~3000	275	15	300	250	350	18.5	5
160L	750~3000	275	15	300	250	350	18.5	5
180M	750~3000	290	15	300	250	350	18.5	5
180L	750~3000	290	15	300	250	350	18.5	5
200L	750~3000	325	17	350	300	400	18.5	5
225S	750~1500	325	20	400	350	450	18.5	5
225M	3000	325	20	400	350	450	18.5	5
225M	750~1500	325	20	400	350	450	18.5	5

Remark: When motor shaft is mounted towards down, the total length L does not cover the additional raincover length.

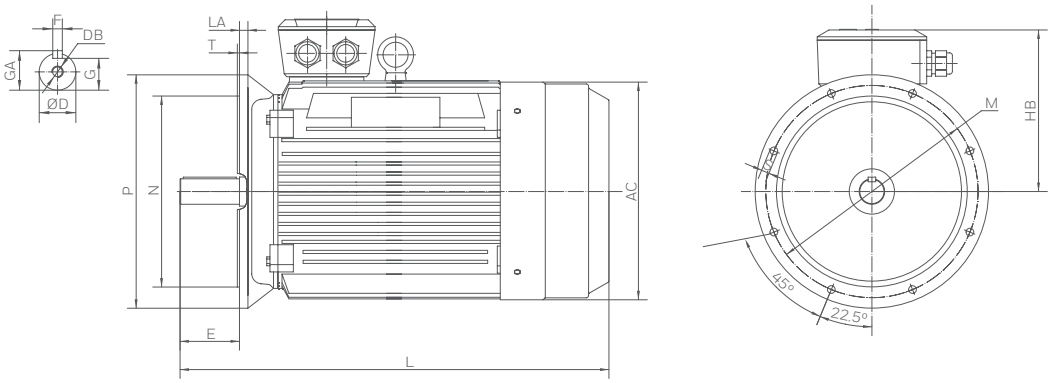
Dimension drawings

Frame size HPM5-250~280

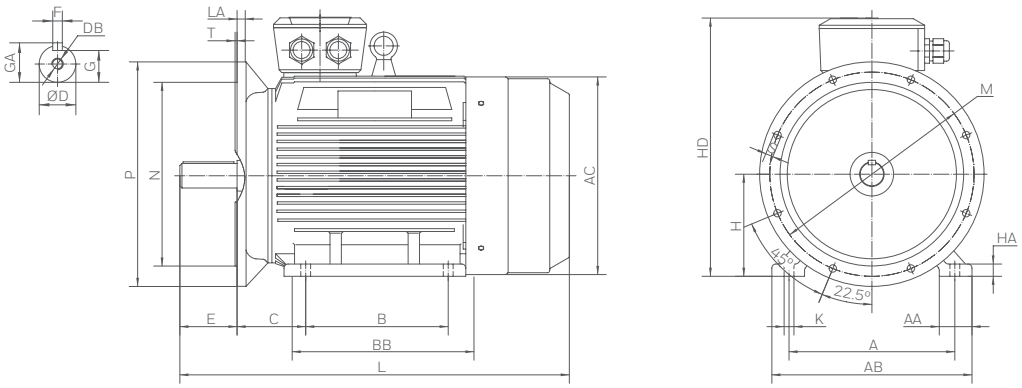
Foot-mounted motor IMB3, IMB6, IMB7, 、 IMB8, IMV5, IMV6



Flanged-mounted motor IMB5, IMV1, IMV3



Footed-and flanged-mounted motor IMB35, IMV15, IMV36



Dimension drawings

Frame size HPM5-250~280

IMB3, IMB6, IMB7, IMB8, IMV5, IMV6; IMB35, IMV15, IMV36

Frame Size	Speed r/min	A	AA	AB	AC	B	BB	C	D	DB	E	F	G	GA	H	K	HA	HD	L
250M	3000	406	80	484	485	349	445	168	60	M20	140	18	53	64	250	24	30	640	920
250M	750~1500	406	80	484	485	349	445	168	65	M20	140	18	58	69	250	24	30	640	920
280S	3000	457	85	542	550	368	485	190	65	M20	140	18	58	69	280	24	35	700	980
280S	750~1500	457	85	542	550	368	485	190	75	M20	140	20	67.5	79.5	280	24	35	700	990
280M	3000	457	85	542	550	419	536	190	65	M20	140	18	58	69	280	24	35	700	1030
280M1	3000	457	85	542	550	419	536	190	65	M20	140	18	58	69	280	24	35	700	1070
280M	750~1500	457	85	542	550	419	536	190	75	M20	140	20	67.5	79.5	280	24	35	700	1040
280M1	750~1500	457	85	542	550	419	536	190	75	M20	140	20	67.5	79.5	280	24	35	700	1080

IMB5, IMV1, IMV3; IMB35, IMV15, IMV36

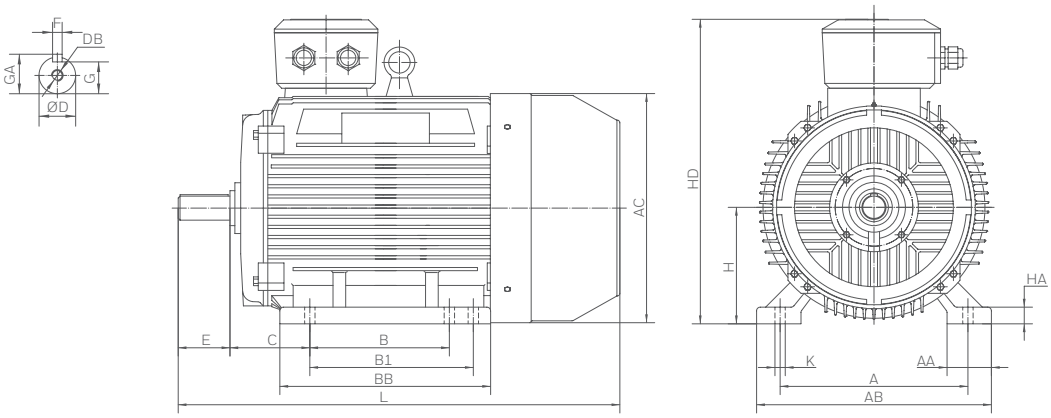
Frame Size	Speed r/min	HB	LA	M	N	P	S	T
250M	3000	390	22	500	450	550	18.5	5
250M	750~1500	390	22	500	450	550	18.5	5
280S	3000	420	22	500	450	550	18.5	5
280S	750~1500	420	22	500	450	550	18.5	5
280M	3000	420	22	500	450	550	18.5	5
280M1	3000	420	22	500	450	550	18.5	5
280M	750~1500	420	22	500	450	550	18.5	5
280M1	750~1500	420	22	500	450	550	18.5	5

Remark: When motor shaft is mounted towards down, the total length L does not cover the additional raincover length.

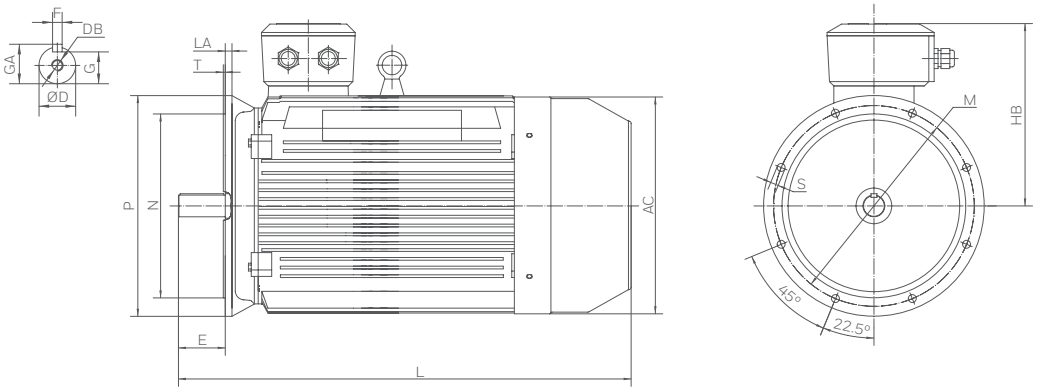
Dimension drawings

Frame size HPM5-315~355

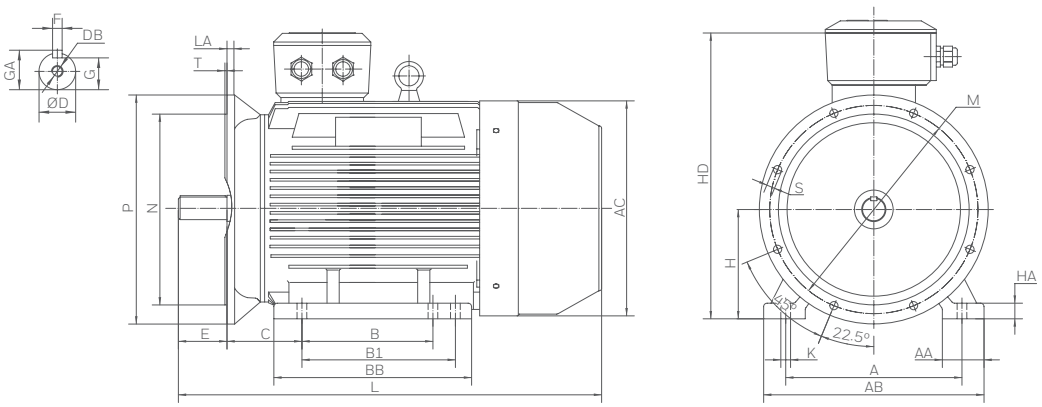
Foot-mounted motor IMB3



Large flange mounted motorsl MV1



Foot-and flanged-mounted motor IMB35, IMV15, IMV36



Dimension drawings

Frame size HPM5-315~355

IMB3; IMB35, IMV15, IMV36

Frame Size	Speed r/min	A	AA	AB	AC	B	B1	BB	C	D	DB	E	F	G	GA	H	K	HA	HD	L
315S	3000	508	120	628	620	406	-	570	216	65	M20	140	18	58	69	315	28	45	870	1200
315S	750~1500	508	120	628	620	406	-	570	216	80	M20	170	22	71	85	315	28	45	870	1230
315ML	3000	508	120	628	620	457	508	680	216	65	M20	140	18	58	69	315	28	45	870	1310
315ML	750~1500	508	120	628	620	457	508	680	216	80	M20	170	22	71	85	315	28	45	870	1340
355ML	3000	610	116	726	710	560	630	750	254	75	M20	140	20	67.5	79.5	355	28	52	1030	1520
355ML	750~1500	610	116	726	710	560	630	750	254	95	M24	170	25	86	100	355	28	52	1030	1550

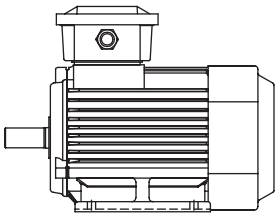
IMV1, IMV3; IMB35, IMV15, IMV36

Frame Size	Speed r/min	HB	LA	M	N	P	S	T
315S	3000	555	22	600	550	660	24	6
315S	750~1500	555	22	600	550	660	24	6
315ML	3000	555	22	600	550	660	24	6
315ML	750~1500	555	22	600	550	660	24	6
355ML	3000	675	25	740	680	800	24	6
355ML	750~1500	675	25	740	680	800	24	6

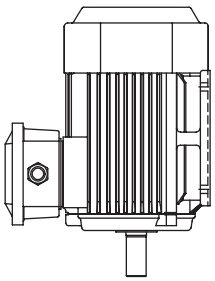
Remark: When motor shaft is mounted towards down, the total length L does not cover the additional raincover length.

Mounting arrangement

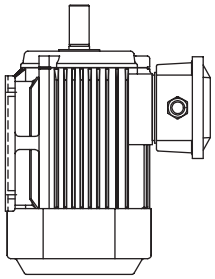
B3



V5



V6



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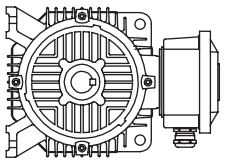
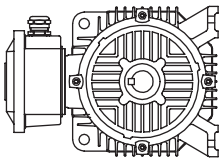
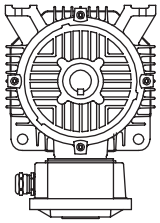


B7



B8



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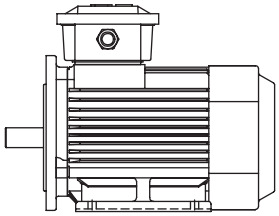
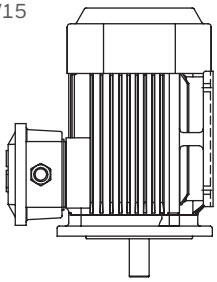
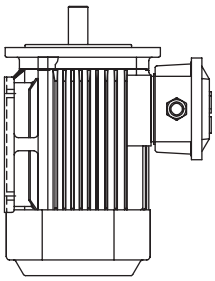


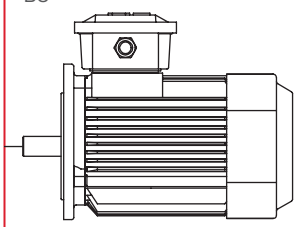
V15



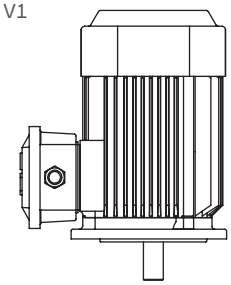
V36



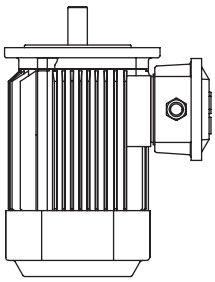
B5



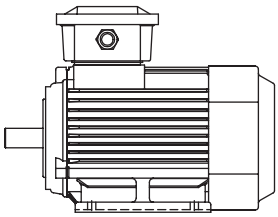
V1



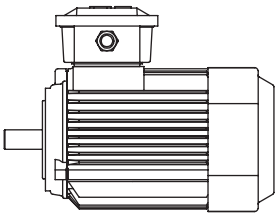
V3



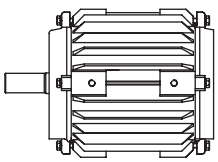
B34



B14



B30



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