TBPKS Series Large VVVF Synchronous Motor

CATALOGUE

>>Part1

■ Company Profile..... P01-02

■ Leaders' Care..... P03-04

■State-of-the-art Manufacturing Capability..... P05-06

■World-Class Electric Machine Manufacturing Equipment..... P07-06

■Best-in-class Core Development Technology..... P08-10

■Reliable Quality Assurance System P11-12

■ All-round Customer Service P13-14

■ Ordering Instructions..... P15-16

>>Part2

■TBPKS Series Large VVVF Synchronous Motor P17-19

■Outline and Mounting Dimensions of TBPKS Series Large VVVF Synchronous Motor P20

■Technical Data of TBPKS Series Large VVVF Synchronous Motor P21-26

■National Standards for Vibration of Electric Machines National Standards for Noise of Electric Machines..... P27-28

■ Motor Paint Colors..... P29-30

Ordering Instructions

Dear Customers,

When placing an order, please note the following except providing the basic parameters of your selected motor. Please carefully read the following items to make sure that your demands are responded most satisfactorily and quickly. If no special requirements are mentioned, production will be made in accordance with national standards and our enterprise standards.

1. Please specify your special requirement on noise (if any). (See national standard for noise on P28)
2. Please specify your special requirement on vibration (if any) (standard values: amplitude 0.037mm; vibration speed 2.3mm/s. Refer to the national standard on vibration in page 27)
3. Please specify your special requirement on number of starts (if any). (Standard: twice at cold state; once at hot state.)
4. Please specify your special requirement on direction of rotation (if any). (Standard: clockwise, viewed from motor shaft extension end; direction of rotation must be indicated for high efficiency energy-saving motor)
5. Please specify types of driven equipment of motors. (e.g. water pump, mill, crushing machine, compressor, rolling mill, disc mill.)
6. Please specify your special requirement on moment of inertia of the load (if any).
7. Please specify types of drive (e.g. with fluid coupling or gearbox or direct-connected)
8. Please specify types of coupling. (e.g. coupling and belt pulley; belt tension must be indicated)
9. Please specify whether installation location for encoder should be reserved on motor.
10. Please specify whether the motor is used in plateau. (Motors with installation altitude over 1000m are subject to special design)
11. Please specify the ambient temperature of the motor.
12. Please specify whether the motor is used in humid tropical zone.
13. Please specify whether the motor is used outdoor.
14. Please specify whether the motor is used near the sea.
15. Please specify requirements for corrosion prevention. (e.g. F1 for low corrosivity, F2 for medium corrosivity, F3 for high corrosivity.)
16. Please specify types of bearings. (e.g. rolling or sliding bearing). Please specify whether imported bearings are needed. (□SKF □FAG □NSK □Domestic)
17. Please specify whether bearings bear thrust.

18. Please specify insulation requirements for bearings.
19. Please specify whether lubrication device needs to be provided by us.
20. If required, please specify special requirements for the lubrication device (if any). (Home-made device will be used if there are no requirements.)
21. Is the required motor standby motor? If yes, please indicate the serial number of the original motor.
22. Please specify whether the neutral points need to be led out.
23. Please specify whether CTs are needed. If yes, please indicate their installation position, for example, in the main terminal box or in the neutral point terminal box.
24. If CTs are needed, please specify the quantity.
25. Please specify whether a space heater is needed.
26. Please specify whether vibration sensors are needed.
27. Please specify special requirement for temperature detectors (if any).
28. Please specify special requirement for material of squirrel-cage rotor (if any) (e.g. cast aluminum, copper bar and trapezoid copper bar)
29. Does paint color need to be specified? (Our standard: “jade green” for indoor, "light gray" for outdoor; for others, please refer to the attached "Paint Colors P29-30")
30. Is double-shaft extension necessary for the motor?
31. Please specify the location of terminal boxes. (Standard: on the right side, viewed from shaft extension end.)
32. Please specify special requirement for ratio of max. torque to rated torque of the motor (if any).
33. Please specify special requirement for ratio of starting torque to rated torque of the motor (if any).
34. Please specify special requirement for ratio of starting current to rated current of the motor (if any).
35. Although high-efficiency motors with power less than or equal to 355kW are not covered by allowance issued by China's Ministry of Finance, it is recommended that high-efficiency motors should still be selected.
36. Magnetic slot wedge should be used for all high-efficiency motors with the central height ≤H710

TBPKS Series Large VVVF Synchronous Motor



I. Introduction

As one of the most promising AC speed control methods, VVVF is being more and more widely used in various fields. By using frequency converter to implement VVVF control on the primary side of AC motors, constant torque characteristics below the basic speed and constant power characteristics above the basic speed can be obtained. TBPKS series large VVVF synchronous motor and frequency converter form AC VVVF system, which supports stepless speed control and energy-saving operation. In addition, equipped with high-precision sensors, it can realize high-precision automatic control. TBPKS series large VVVF synchronous motor has the advantages of high efficiency, low noise, low vibration, wide speed control range, smooth operation and excellent overload capacity.

II. Application scope

TBPKS series large VVVF synchronous motors are widely used in metallurgy, mining, oilfield, port, ships, paper making, water supply and other industries and professional test equipment.

(1) General industrial frequency conversion synchronous motor

Loads of these motors can be adjusted by controlling their mechanical speed, thus achieving the effect of energy saving. They are mainly used for fans, pumps and other loads, which usually work in the S1 continuous running duty-type.

(2) Variable frequency synchronous motor for hoist and other loads

These motors are inverter-driven S8 continuous-duty motors with corresponding load-speed variations.

(3) Synchronous motor for metal rolling mill

The motor is often used to drive the metal rolling mill, which usually operates unidirectionally or bidirectionally if necessary. This type of rolling mill motor generally needs to meet the following requirements:

1. Sufficient margin for temperature rise under rated load: In the case of 100% rated load in the rated working condition, the temperature rise of the motor is assessed according to class B insulation.

2. Continuous overload capacity: the motor can run continuously under 115% of the rated load in the rated working condition, at which time the temperature rise of the motor is assessed according to the class F insulation.

3. Rigid mechanical structure to meet the requirements of rapid reversal, and withstand the sudden impact of heavy loads.

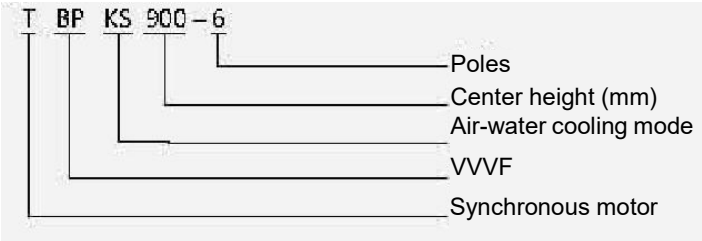
4. The motor runs in the S9 duty type with non-periodic change of load and speed.

5. Excessive short-time overload capacity.

6. Closed-loop speed control: adopt speed measuring device for closed-loop speed control.

III. Explanation of models

Example:



IV. Structural features

(1) Typical structure description:

--The motor is horizontal.

--Cylindrical shaft extension at one end (without key).

--Steel plate welded box type frame.

--Sliding bearing (end cap or seat type) with compound lubrication (or compound lubrication + high pressure oil jacking device).

--Slip ring is located on the outer side of the bearing at the non-shaft extension end, and the encoder mounting position is left at the end of the rotating shaft. The slip ring cover is fixed to the end cap.

--From the shaft extension end, the main junction box, measurement junction box and heater junction box are located on the right side of the frame (or on the left side according to the user's requirements).

--Top (or bottom) mounted air-water cooler with cooling fan.

--With mounting base plate and anchor bolts.

(2) Structure description

This series of motors are enclosed air-water cooled salient pole synchronous motors with IC86W cooling and protection level IP44 or IP54. The motor consists of stator, rotor, bearing, collector ring (slip ring), cooler and other parts.

The stator is of axial insertion structure. The stator windings are of class F insulation structure specialized for variable frequency motors, with reliable fixing and binding at the ends. During the manufacturing process, after all stages of turn-to-turn and ground voltage withstand tests, and the vacuum pressure impregnation solvent-free paint process, the stator coil and the iron core become a solid whole, featuring excellent and reliable insulation, high mechanical strength, and strong moisture resistance.

The rotor winding is connected in series by magnetic level coils with heat dissipating turns. Each pole coil is formed by welding flat copper wires, which is set into the iron core and then subject to overall vacuum pressure dipping paint. Support parts are installed between each pole, and the pole body and the rotor shaft are connected by dove-tail or T-tail. Fully damped windings are used.

Sliding bearings are used, which are usually end-cap or pedestal bearings. No matter what kind of structure, it has spherical self-aligning function. The front and rear bearings are insulated and have grounded brushes at the bearing extension end. The motor usually cannot withstand the applied axial force, and the axial allowable runout is ±0.5~±2rnm.





End-cap rolling bearing structure can also be used.

The air-water cooler has its own fan. The air inside the motor is provided by the cooler fan, which enters the inside of the frame from both ends to effectively achieve evenly distribution of the temperature rise of the motor, ensure the uniform deformation of each part, and guarantee the air volume of the internal air under various working conditions.

V. Notes on ordering

(1) Motor rating is a continuous rating based on S1 duty type;

(2) Rated voltage: commonly used voltage levels of 600V, 690V, 1200V, 1650V, 3150V, 3300V, 6600V, 10000V.

(3) Normal operating conditions:

1. Altitude: ≤1,000 m.

2. Ambient temperature 5 ~ 40 ℃. The air does not contain acid, alkali, salt and other harmful gases, and the dust content does not exceed 0.15mg / m^3;

3. The cooling water inlet temperature is 5~33℃.

(4) The standard measurement point arrangement for the motor:

1. Stator winding temperature measurement element pt100, two pieces per phase;

2. Bearing temperature measurement element pt100, each for front and rear bearings;

3. One temperature measuring element pt100 at the air-water cooler inlet and outlet, respectively;

4. Each cooling box is provided with one leak detection device.

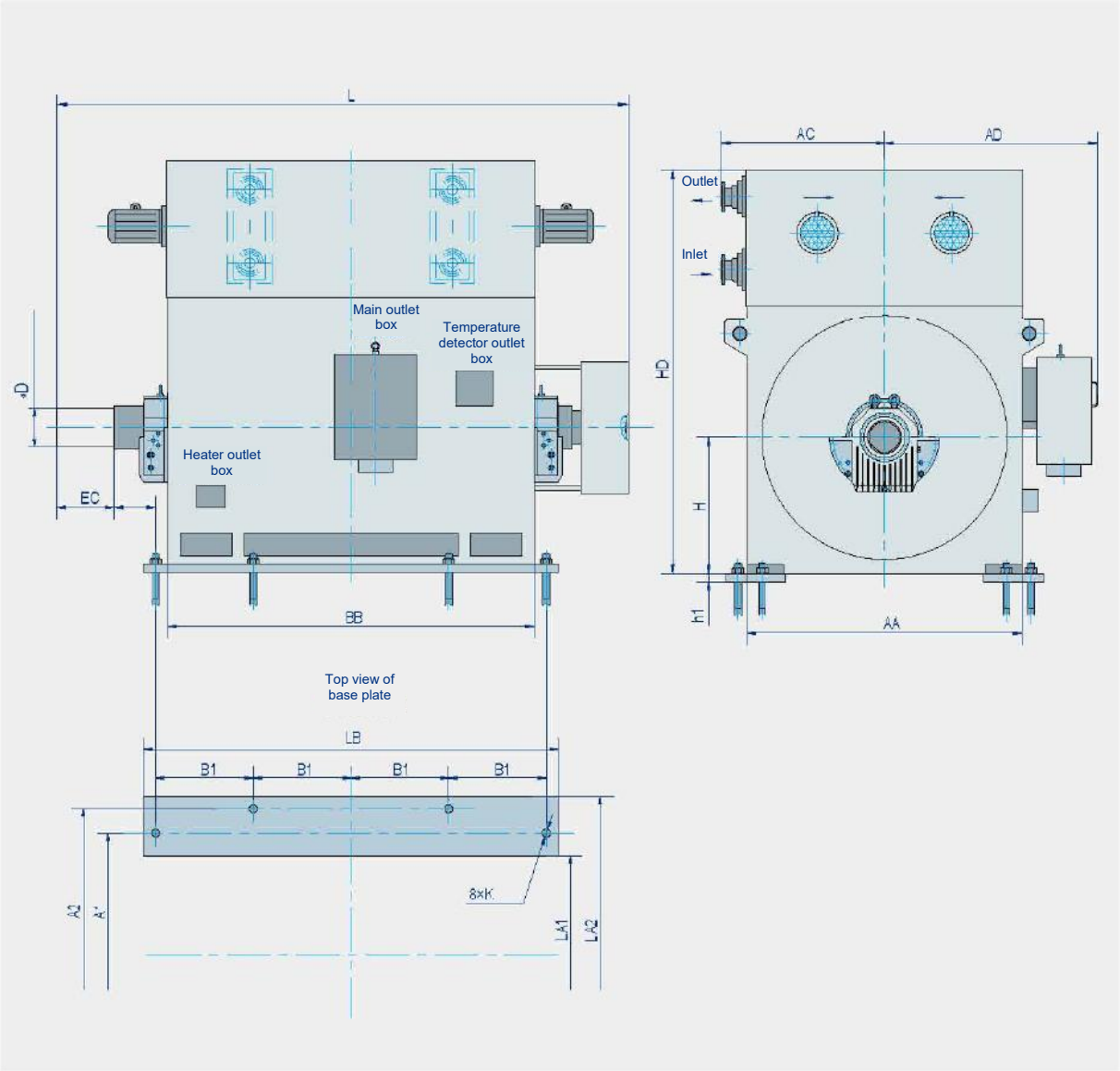
(5) Rated voltage 380V and rated power 24KW for the shutdown heater.

This sample is for reference only. Users should contact the motor manufacturer according to the type of inverter, nature of load, operating conditions and other requirements when ordering.



Outline and Mounting Dimensions of TBPKS Series Large VVVF Synchronous Motor

► Outline and mounting dimensions of TBPKS series large VVVF synchronous motor



Center height (mm)	Mounting dimensions and tolerance								Overall dimensions									
	A1	A2	B1	C	D	E	H	K	AA	BB	LA1	LA2	LB	AC	AD	L	h1	HD
800	1600	2000	700	290	220	350	800	56	1860	2600	1320	2200	3000	1200	1550	4220	65	2860
900	1800	2200	750	290	250	410	900	56	2060	2800	1470	2400	3200	1300	1650	4480	65	3080
1000	2000	2400	800	330	280	470	1000	66	2250	3000	1620	2600	3400	1400	1750	4780	65	3340
1120	2240	2660	850	330	320	470	1120	66	2500	3200	1840	2860	3600	1530	1880	4980	65	3620

TBPKS Series Large VVVF Synchronous Motor

► **TBPKS800-900-4 1650V 750/1500rpm Overload 2.5 times Technical data of VVVF three-phase synchronous motor (design value)**

Model	Nominal power(KW)	Rated voltage (V)	Nominal current(A)	Efficiency (%)	Power factor	Frequency (Hz)	Speed (rpm)	Excitation voltage (V)	Excitation current (A)	X “d/x “q (25Hz)	Moment of inertia ($kg•m^2$)
TBPKS800-4	2800/2800	1650/1650	1001/1010	97.9/97.1	1.0	25/50	750/1500	52.3/47.5	409/372	0.187/0.224	380
	3150/3150	1650/1650	1125/1134	97.9/92.2	1.0	25/50	750/1500	55.7/48.5	407/354	0.165/0.197	410
	3550/3550	1650/1650	1268/1277	98.0/97.3	1.0	25/50	750/1500	60.6/54.7	415/374	0.175/0.211	440
	4000/4000	1650/1650	1428/1437	98.0/97.4	1.0	25/50	750/1500	67.4/62.4	435/403	0.194/0.235	470
TBPKS900-4	4500/4500	1650/1650	1605/1620	98.1/97.2	1.0	25/50	750/1500	69.6/61.7	380/337	0.157/0.182	745
	5000/5000	1650/1650	1782/1798	98.2/97.3	1.0	25/50	750/1500	75.5/68.1	391/353	0.163/0.189	795
	5600/5600	1650/1650	1994/2010	98.3/97.5	1.0	25/50	750/1500	83.2/76.7	409/377	0.177/0.207	845

► **TBPKS800-900-6 1650V 400/1500rpm Overload 1.5 times Technical data of VVVF three-phase synchronous motor (design value)**

Model	Nominal power(KW)	Rated voltage (V)	Nominal current(A)	Efficiency (%)	Power factor	Frequency (Hz)	Speed (rpm)	Excitation voltage (V)	Excitation current (A)	X “d/x “q (25Hz)	Moment of inertia ($kg•m^2$)
TBPKS800-6	1600/1600	1650/1650	576/597	97.2/93.8	1.0	20/75	400/1500	68.3/56.7	307/255	0.162/0.174	505
	1800/1800	1650/1650	647/668	97.4/94.2	1.0	20/75	400/1500	74.1/61.3	309/256	0.160/0.172	550
	2000/2000	1650/1650	717/740	97.6/94.6	1.0	20/75	400/1500	80.0/66.5	311/259	0.162/0.175	595
	2240/2240	1650/1650	803/827	97.6/94.8	1.0	20/75	400/1500	87.2/69.0	318/252	0.149/0.160	640
TBPKS900-6	2500/2500	1650/1650	898/925	97.5/94.5	1.0	20/75	400/1500	80.6/63.0	378/295	0.156/0.167	850
	2800/2800	1650/1650	1004/1034	97.6/94.8	1.0	20/75	400/1500	87.1/68.2	379/297	0.156/0.167	930
	3150/3150	1650/1650	1129/1160	97.6/95.0	1.0	20/75	400/1500	92.6/79.6	376/323	0.176/0.188	1010
	3550/3550	1650/1650	1271/1303	97.7/95.3	1.0	20/75	400/1500	102/81.1	387/309	0.156/0.167	1090

► **TBPKS1000-6 1650V 400/1300rpm Overload 1.75 times Technical data of VVVF three-phase synchronous motor (design value)**

Model	Nominal power(KW)	Rated voltage (V)	Nominal current(A)	Efficiency (%)	Power factor	Frequency (Hz)	Speed (rpm)	Excitation voltage (V)	Excitation current (A)	X “d/x “q (25Hz)	Moment of inertia (kg•m^2)
TBPKS1000-6	4000/4000	1650/1650	1432/1475	97.8/94.9	1.0	20/65	400/1300	93.7/80.9	389/335	0.172/0.186	1850
	4500/4500	1650/1650	1608/1653	97.9/95.3	1.0	20/65	400/1300	103/82.3	403/321	0.154/0.166	1980
	5000/5000	1650/1650	1786/1833	97.9/95.4	1.0	20/65	400/1300	110/93.8	404/345	0.170/0.183	2110
	5600/5600	1650/1650	1999/2048	98.0/95.7	1.0	20/65	400/1300	119/106	415/371	0.185/0.200	2240

► **TBPKS900-1120 1650V 300/750rpm Overload 2.0 times Technical data of VVVF three-phase synchronous motor (design value)**

Model	Nominal power(KW)	Rated voltage (V)	Nominal current(A)	Efficiency (%)	Power factor	Frequency (Hz)	Speed (rpm)	Excitation voltage (V)	Excitation current (A)	X “d/x “q (25Hz)	Moment of inertia (kg•m^2)
TBPKS900-8	2000/2000	1650/1650	719/724	97.3/96.7	1.0	20/50	300/750	94.2/76.0	322/260	0.192/0.199	850
	2240/2240	1650/1650	805/810	97.3/96.7	1.0	20/50	300/750	102/83.3	321/263	0.194/0.201	930
	2500/2500	1650/1650	897/902	97.5/97.0	1.0	20/50	300/750	111/89.6	324/263	0.190/0.196	1010
TBPKS1000-8	2800/2800	1650/1650	1006/1014	97.4/96.7	1.0	20/50	300/750	99.0/81.5	302/249	0.185/0.192	1590
	3150/3150	1650/1650	1132/1139	97.4/96.7	1.0	20/50	300/750	108/87.3	307/248	0.178/0.185	1720
	3550/3550	1650/1650	1274/1282	97.5/97.9	1.0	20/50	300/750	118/94.5	314/251	0.177/0.183	1850
	4000/4000	1650/1650	1435/1444	97.5/97.0	1.0	20/50	300/750	127/109	318/273	0.199/0.207	1980
TBPKS1120-8	4500/4500	1650/1650	1613/1622	97.6/97.1	1.0	20/50	300/750	140/118	319/270	0.193/0.200	2180
	5000/5000	1650/1650	1793/1802	97.6/97.1	1.0	20/50	300/750	151/134	328/291	0.212/0.221	2310
	5600/5600	1650/1650	2005/2013	97.7/97.3	1.0	20/50	300/750	166/135	341/278	0.186/0.193	2440

XEMC 湘电集团

TBPKS Series Large VVVF Synchronous Motor

► **TBPKS800-900-4 3150V 750/1500rpm Overload 2.5 times Technical data of VVVF three-phase synchronous motor (design value)**

Model	Nominal power(KW)	Rated voltage (V)	Nominal current(A)	Efficiency (%)	Power factor	Frequency (Hz)	Speed (rpm)	Excitation voltage (V)	Excitation current (A)	X “d/x “q (25Hz)	Moment of inertia ($kg•m^2$)
TBPKS800-4	2800/2800	3150/3150	525/529	97.8/97.1	1.0	25/50	750/1500	51.6/45.0	418/365	0.172/0.205	365
	3150/3150	3150/3150	590/594	97.9/97.2	1.0	25/50	750/1500	55.8/49.0	421/370	0.175/0.209	395
	3550/3550	3150/3150	664/669	98.0/97.3	1.0	25/50	750/1500	60.9/55.4	431/392	0.186/0.224	425
	4000/4000	3150/3150	748/753	98.0/97.4	1.0	25/50	750/1500	65.8/59.7	437/396	0.183/0.221	455
TBPKS900-4	4500/4500	3150/3150	841/848	98.1/97.2	1.0	25/50	750/1500	69.8/62.6	393/352	0.168/0.194	720
	5000/5000	3150/3150	933/941	98.2/97.4	1.0	25/50	750/1500	75.9/69.3	404/369	0.174/0.202	770
	5600/5600	3150/3150	1044/1052	98.3/97.5	1.0	25/50	750/1500	80.5/71.9	406/363	0.161/0.187	820
	6300/6300	3150/3150	1174/1183	98.3/97.6	1.0	25/50	750/1500	88.1/80.1	423/385	0.169/0.197	870

► **TBPKS800-900-6 3150V 400/1500rpm Overload 1.75 times Technical data of VVVF three-phase synchronous motor (design value)**

Model	Nominal power(KW)	Rated voltage (V)	Nominal current(A)	Efficiency (%)	Power factor	Frequency (Hz)	Speed (rpm)	Excitation voltage (V)	Excitation current (A)	X “d/x “q (25Hz)	Moment of inertia ($kg·m^2$)
TBPKS800-6	1600/1600	3150/3150	301/312	97.3/94.0	1.0	20/75	400/1500	68.1/55.9	319/262	0.165/0.178	480
	1800/1800	3150/3150	338/349	97.5/94.4	1.0.	20/75	400/1500	74.0/60.3	320/261	0.162/0.174	525
	2000/2000	3150/3150	376/387	97.5/94.6	1.0.	20/75	400/1500	79.6/67.5	321/272	0.172/0.185	570
	2240/2240	3150/3150	420/432	97.7/94.9	1.0	20/75	400/1500	86.5/70.1	326/264	0.158/0.170	615
TBPKS900-6	2500/2500	3150/3150	470/484	97.4/94.6	1.0	20/75	400/1500	80.7/63.6	393/311	0.164/0.176	810
	2800/2800	3150/3150	526/541	97.5/94.8	1.0	20/75	400/1500	86.8/69.1	392/312	0.165/0.176	890
	3150/3150	3150/3150	591/607	97.6/95.1	1.0	20/75	400/1500	93.9/74.6	394/313	0.161/0.172	970
	3550/3550	3150/3150	666/683	97.7/95.3	1.0	20/75	400/1500	101/82.5	397/324	0.166/0.178	1050

► **TBPKS1000-6 3150V 400/1300rpm Overload 1.75 times Technical data of VVVF three-phase synchronous motor (design value)**

Model	Nominal power(KW)	Rated voltage (V)	Nominal current(A)	Efficiency (%)	Power factor	Frequency (Hz)	Speed (rpm)	Excitation voltage (V)	Excitation current (A)	X “d/x “q (25Hz)	Moment of inertia (kg•m^2)
TBPKS1000-6	4000/4000	3150/3150	749/763	97.9/96.1	1.0	20/65	400/1300	94.7/76.4	406/327	0.166/0.178	1780
	4500/4500	3150/3150	842/857	97.9/96.3	1.0	20/65	400/1300	103/82.7	412/333	0.165/0.177	1910
	5000/5000	3150/3150	936/951	98.0/96.4	1.0	20/65	400/1300	109/94.3	414/357	0.181/0.196	2040
	5600/5600	3150/3150	1047/1062	98.0/96.6	1.0	20/65	400/1300	119/100	425/358	0.175/0.188	2170

► **TBPKS900-1120-8 3150V 300/750rpm Overload 2.0 times Technical data of VVVF three-phase synchronous motor (design value)**

Model	Nominal power(KW)	Rated voltage (V)	Nominal current(A)	Efficiency (%)	Power factor	Frequency (Hz)	Speed (rpm)	Excitation voltage (V)	Excitation current (A)	X “d/x “q (25Hz)	Moment of inertia (kg•m^2)
TBPKS900-8	2000/2000	3150/3150	377/379	97.2/96.6	1.0	20/50	300/750	93.9/76.4	335/272	0.202/0.209	810
	2240/2240	3150/3150	422/424	97.3/96.7	1.0	20/50	300/750	101/84.0	332/276	0.205/0.212	890
	2500/2500	3150/3150	470/473	97.4/96.9	1.0	20/50	300/750	110/90.7	333/275	0.201/0.208	970
TBPKS1000-8	2800/2800	3150/3150	528/531	97.3/96.6	1.0	20/50	300/750	98.7/82.4	313/275	0.195/0.203	1520
	3150/3150	3150/3150	593/597	97.4/96.8	1.0	20/50	300/750	108/88.3	316/260	0.188/0.196	1650
	3550/3550	3150/3150	667/671	97.5/96.9	1.0	20/50	300/750	117/95.8	322/263	0.188/0.195	1780
	4000/4000	3150/3150	752/756	97.5/97.0	1.0	20/50	300/750	128/106	328/274	0.195/0.203	1910
TBPKS1120-8	4500/4500	3150/3150	845/850	97.6/97.1	1.0	20/50	300/750	139/121	328/283	0.206/0.214	2110
	5000/5000	3150/3150	938/943	97.6/97.2	1.0	20/50	300/750	151/129	335/288	0.204/0.212	2240
	5600/5600	3150/3150	1050/1055	97.7/97.3	1.0	20/50	300/750	165/138	347/292	0.200/0.207	2370

TBPKS Series Large VVVF Synchronous Motor

► **TBPKS800-900-4 3300V 750/1500rpm Overload 2.5 times Technical data of VVVF three-phase synchronous motor (design value)**

Model	Nominal power(KW)	Rated voltage (V)	Nominal current(A)	Efficiency (%)	Power factor	Frequency (Hz)	Speed (rpm)	Excitation voltage (V)	Excitation current (A)	X “d/x “q (25Hz)	Moment of inertia (kg•m^2)
TBPKS800-4	2800/2800	3300/3300	501/505	97.8/97.1	1.0	25/50	750/1500	51.5/44.6	403/349	0.163/0.195	380
	3150/3150	3300/3300	563/567	97.9/97.2	1.0	25/50	750/1500	55.7/48.5	407/354	0.165/0.197	410
	3550/3550	3300/3300	634/638	98.0/97.3	1.0	25/50	750/1500	60.7/54.7	415/375	0.175/0.211	440
	4000/4000	3300/3300	714Z719	98.0/97.4	1.0	25/50	750/1500	65.6/58.8	423/379	0.173/0.208	470
TBPKS900-4	4500/4500	3300/3300	803/810	98.1/97.2	1.0.	25/50	750/1500	69.6/61.7	380/337	0.157/0.182	745
	5000/5000	3300/3300	891/899	98.2/97.3	1.0	25/50	750/1500	75.5/68.1	391/353	0.163/0.190	795
	5600/5600	3300/3300	997/1005	98.2/97.5	1.0	25/50	750/1500	80.2/70.6	395/348	0.151/0.176	845
	6300/6300	3300/3300	1122/1130	98.3/97.6	1.0	25/50	750/1500	87.6/78.7	411/369	0.158/0.185	895

► **TBPKS800-900-6 3300V 400/1500rpm Overload 1.75 times Technical data of VVVF three-phase synchronous motor (design value)**

Model	Nominal power(KW)	Rated voltage (V)	Nominal current(A)	Efficiency (%)	Power factor	Frequency (Hz)	Speed (rpm)	Excitation voltage (V)	Excitation current (A)	X “d/x “q (25Hz)	Moment of inertia (kg•m^2)
TBPKS800-6	1600/1600	3300/3300	288/298	97.2/93.8	1.0	20/75	400/1500	68.5/55.4	308/249	0.157/0.170	505
	1800/1800	3300/3300	323/334	97.4/94.2	1.0	20/75	400/1500	74.6/59.6	311/249	0.153/0.165	550
	2000/2000	3300/3300	359/370	97.5/94.5	1.0	20/75	400/1500	80.0/66.6	312/259	0.162/0.175	595
	2240/2240	3300/3300	402/414	97.5/94.7	1.0	20/75	400/1500	86.7/71.9	316/363	0.160/0.173	640
TBPKS900-6	2500/2500	3300/3300	449/463	97.4/94.5	1.0	20/75	400/1500	80.6/63.1	378/296	0.157/0.167	850
	2800/2800	3300/3300	502/517	97.5/94.8	1.0	20/75	400/1500	87.1/68.2	379/297	0.157/0.167	930
	3150/3150	3300/3300	565/580	97.6/95.0	1.0	20/75	400/1500	94.6/73.5	384/298	0.152/0.163	1010
	3550/3550	3300/3300	636/652	97.7/95.3	1.0	20/75	400/1500	102/81.2	387/309	0.157/0.168	1090

► **TBPKS1000-6 3300V 400/1300rpm Overload 1.75 times Technical data of VVVF three-phase synchronous motor (design value)**

Model	Nominal power(KW)	Rated voltage (V)	Nominal current(A)	Efficiency (%)	Power factor	Frequency (Hz)	Speed (rpm)	Excitation voltage (V)	Excitation current (A)	X “d/x “q (25Hz)	Moment of inertia (kg•m^2)
TBPKS1000-6	4000/4000	3300/3300	715/729	97.9/96.1	1.0	20/65	400/1300	95.0/75.2	394/312	0.156/0.168	1850
	4500/4500	3300/3300	804/818	97.9/96.2	1.0	20/65	400/1300	103/81.4	403/317	0.155/0.167	1980
	5000/5000	3300/3300	893/908	98.0/96.4	1.0	20/65	400/1300	110/92.5	404/340	0.170/0.184	2110
	5600/5600	3300/3300	999/1014	98.0/96.6	1.0	20/65	400/1300	119/98.0	416/342	0.164/0.177	2240

► **TBPKS900-1120-8 3300V 300/7500rpm Overload 2.0 times Technical data of VVVF three-phase synchronous motor (design value)**

Model	Nominal power(KW)	Rated voltage (V)	Nominal current(A)	Efficiency (%)	Power factor	Frequency (Hz)	Speed (rpm)	Excitation voltage (V)	Excitation current (A)	X “d/x “q (25Hz)	Moment of inertia (kg•m^2)
TBPKS900-8	2000/2000	3300/3300	360/362	97.2/96.6	1.0	20/50	300/750	94.2/76.1	322/260	0.193/0.200	850
	2240/2240	3300/3300	403/405	97.3/96.7	1.0	20/50	300/750	102/83.4	321/263	0.195/0.201	930
	2500/2500	3300/3300	449/451	97.4/96.9	1.0	20/50	300/750	111/89.8	324/263	0.190/0.197	1010
TBPKS1000-8	2800/2800	3300/3300	504/508	97.2/96.5	1.0	20/50	300/750	99.0/81.7	302/249	0.186/0.193	1590
	3150/3150	3300/3300	566/570	97.4/96.8	1.0	20/50	300/750	108/87.3	307/248	0.178/0.185	1720
	3550/3550	3300/3300	637/641	97.5/96.9	1.0	20/50	300/750	118/94.6	314/251	0.177/0.184	1850
	4000/4000	3300/3300	718/722	97.5/97.0	1.0	20/50	300/750	128/105	320/261	0.184/0.191	1980
TBPKS1120-8	4500/4500	3300/3300	807/811	97.6/97.1	1.0	20/50	300/750	140/118	320/270	0.194/0.201	2180
	5000/5000	3300/3300	896/900	97.6/97.2	1.0	20/50	300/750	151/127	328/274	0.191/0.199	2310
	5600/5600	3300/3300	1003/1007	97.7/97.3	1.0	20/50	300/750	166/136	341/279	0.187/0.194	2440



National Standards for Vibration of Electric Machines National Standards for Noise of Electric Machines

According to the requirements in national standard GB10068-2008 of the People's Republic of China (PRC) *Mechanical Vibration of Certain Machines with Shaft Heights 56 mm and Higher - Measurement, Evaluation and Limits of Vibration Severity* for vibration of electric machines. Under the conditions required by the standard, during running at no load, our motors are subject to the following vibration intensity limits expressed by displacement and speed measured in the factory vibration test: 37μm and 2.3mm/s.

Excerpts from National Standards Are as Follows:

• Vibration intensity limits

The vibration limits are applicable to the broadband root mean square values of vibration speed, displacement and acceleration measured in the frequency range specified in Chapter 5. The maximum values of these three measured values are used to evaluate the intensity of vibration.

Under the two installation conditions specified in Chapter 6, the vibration intensity of DC and 3-phase AC motors with the shaft center height of 56mm or above shall not exceed the limits in Table 1. Vibration levels are divided into two types. If the vibration level is not specified, the vibration limit of the motor shall meet the requirements of level "A".

For motors with the rotating speed of 600 r/min~3600 r/min, only the vibration speed needs to measure during the inspection test. During the type test, all three vibration values shall be measured.

Note: When the inspection test is carried out under free suspension installation, the type test must include the test under the condition of rigid installation. This article applies to all speed ranges in this standard.

Table 1 Limits of vibration intensity (root mean square value) expressed by displacement, velocity and acceleration for different shaft center heights H (mm)

Vibration grade	Shaft center height/mm	56≤H≤132			132<H≤280			H>280		
	Installation mode	Displacement /μm	Speed/(mm/s)	Acceleration/ (m/s^2)	Displacement/ μm	Speed/ (mm/s)	Acceleration/ (r^2)	Displacement/ μm	Speed/ (mm/s)	Acceleration/ (m/s^2)
A	Free suspension	25	1.6	2.5	35	2.2	3.5	45	2.8	4.4
	Rigid installation	21	1.3	2.0	29	1.8	2.8	37	2.3	3.6
B	Free suspension	11	0.7	1.1	18	1.1	1.7	29	1.8	2.8
	Rigid installation	——	——	——	14	0.9	1.4	24	1.5	2.4

Note 1: Grade "A" is suitable for motors with no special requirements for vibration.

Note 2: Grade "B" is suitable for motors with special requirements for vibration. Motors with the shaft center height lower than 132 mm is not considered for rigid installation.

Note 3: The interface frequency of displacement and speed and that of speed and acceleration are 10 Hz and 250 Hz respectively.

Note 1: Manufacturers and users should consider that measuring instruments may have a measuring tolerance of ±10%.

Note 2: Take the shaft center height of a horizontal motor with casters of the frame as that of a motor without casters of the frame or a motor with casters upward or a vertical motor.

Note 3: A motor with good self-balance and the vibration intensity level meeting the requirements in Table 1 will also show great vibration when installed in the field due to various factors, such as uneven foundation, reaction of load machinery and ripple current in the power supply. In addition, because the natural frequencies of the driven units are very close to the excitation frequencies of the tiny residual unbalance of the motor rotor, vibration will also occur. In these cases, not only the motor but also every unit in the device shall be tested, as shown in ISO10816-3.

National Standards for Vibration of Electric Machines

There are the following descriptions and requirements for motor noise in national standard GB10069.3-2008 of the People's Republic of China (PRC): *Measurement of Airborne Noise Emitted by Rotating Electrical Machines and Noise Limits-Part3: Noise Limits*.

Noise can be expressed by sound power level or sound pressure level, in decibels (dB). Motor noise is generally assessed by sound power level, and the values of sound power level and sound pressure level are quite different according to the size of the motor (envelope surface area). Generally, the sound power level is 15 ~ 18 dB larger than the sound pressure level.

- On page 6 of the national standard, it is stipulated that the sound power level Lw (dB) measured at different rotating speeds, cooling modes and rated output power shall not exceed the values in the following table.

Rated speed n_N/(r/min)	$n_N \le 960$			$960 < n_N \le 1320$			$1320 < n_N \le 1900$			$1900 < n_N \le 2360$			$2360 < n_N \le 3150$			$3150 < n_N \le 3750$		
Cooling mode (Simple code)	IC01 IC11 IC21	IC411 IC511 IC611	IC31 IC71W IC81W IC8A1W7	IC01 IC11 IC21	IC411 IC511 IC611	IC31 IC71W IC81W IC8A1W7	IC01 IC11 IC21	IC411 IC511 IC611	IC31 IC71W IC81W IC8A1W7	IC01 IC11 IC21	IC411 IC511 IC611	IC31 IC71W IC81W IC8A1W7	IC01 IC11 IC21	IC411 IC511 IC611	IC31 IC71W IC81W IC8A1W7	IC01 IC11 IC21	IC411 IC511 IC611	IC31 IC71W IC81W IC8A1W7
	Note 1	Note 2	Note 2	Note 1	Note 2	Note 2	Note 1	Note 2	Note 2	Note 1	Note 2	Note 2	Note 1	Note 2	Note 2	Note 1	Note 2	Note 2
Rated output P_N/ kW (or kVA)																		
$1 < P_N \le 1.1$	73	73	—	76	76	—	77	78	—	79	81	—	81	84	—	82	88	—
$1.1 < P_N \le 2.2$	74	74	——	78	78	——	81	82	——	83	85	——	85	88	——	86	91	——
$2.2 < P_N \le 5.5$	77	78	—	81	82	—	85	86	—	86	90	—	89	93	—	93	95	—
$5.5 < P_N \le 1.1$	81	82	—	85	85	—	88	90	—	90	93	—	93	97	—	97	98	—
11<PN<22	84	86	——	88	88	——	91	94	——	93	97	——	96	100	——	97	100	——
$22 < P_N \le 37$	87	87	—	91	91	—	94	98	—	96	100	—	99	102	—	101	102	—
$37 < P_N \le 55$	90	93	—	94	94	—	97	100	—	98	102	—	101	104	—	103	104	—
$55 < P_N \le 110$	93	96	—	97	98	—	100	103	—	101	104	—	103	106	—	105	106	—
$110 < P_N \le 220$	97	99	—	100	102	—	103	106	—	103	107	—	105	109	—	107	110	—
$220 < P_N \le 550$	99	102	98	103	105	100	106	108	102	106	109	102	107	111	102	110	113	105
$550 < P_N \le 1100$	101	105	100	106	108	103	108	111	104	108	111	104	109	112	104	111	116	106
$1000 < P_N \le 2200$	103	107	102	108	110	105	109	113	105	109	113	105	110	113	105	112	118	107
$2200 < P_N \le 5500$	105	109	104	110	112	106	110	115	106	111	115	107	112	115	107	114	120	109

Note 1: The typical protection type is IP22 or IP23.
Note 2: The typical protection type is IP44 or IP54.

- There is no specific requirement for sound pressure level in national standards. If there is a requirement, the sound pressure level can be directly converted from the sound power level of the following equation:

(Equation 1)

$$L_p = L_w - 10 \lg \left(\frac{S}{S_0} \right)$$

Where:

L_P - sound pressure level in free field on the reflecting surface 1m away from the motor.

L_w - sound power level determined according to the standards

S_0 - 1.0 m^2

S-motor measurement envelope surface area 1m away from the reference body

Paint colors for motor

According to the statistics of the colors used by customers for many years, combining some advantages and disadvantages, it is suggested that customers choose from the following common colors when ordering.

Preferred recommended colors:

When the customer doesn't specify the color of the top coat, the hammer paint of our factory is adopted by default, and the motor used indoors is "jade green" and the motor used outdoors is "light gray".

Advantages: The two colors are polyurethane hammer paint with beautiful and clear patterns, bright and plump paint film, good weather resistance, oil resistance, chemical corrosion resistance, and good hardness and wear resistance. The paint film dries quickly and is convenient for construction. It is widely used in indoor and outdoor metal structures.

Examples:



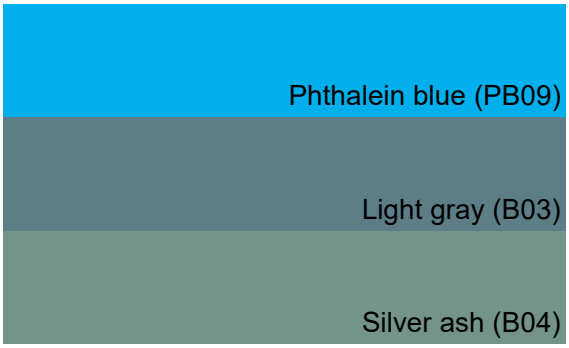
Light gray

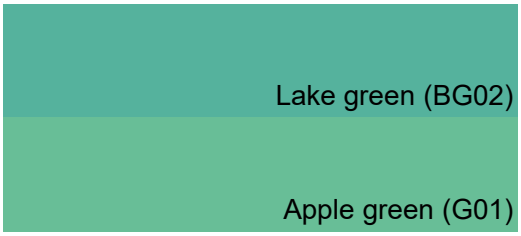


Jade green

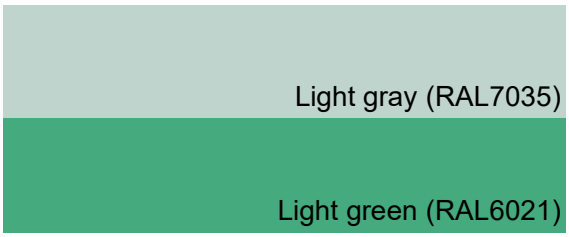
Other recommended colors:

Colors in commonly used national standard color card GSB 05-1426-2001





Colors in commonly used international color card RAL





Note: 1. The electronic version of paint colors is for reference only, and the construction and quality inspection are subject to the physical standard color cards.

2. Please indicate the paint label number in the contract documents when ordering.

XIANGTAN ELECTRIC MFG. GROUP CORPORATION LTD.

ADD: No. 302, Str. Xiashesi, Xiangtan City, Hunan.P.R.C