Высоковольтные электродвигатели переменного тока для электростанций YKK

Технические характеристики

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High Voltage Ac Power Plant Motor

Description ： High voltage AC power plant motors,usually referring to rated voltages of 6kV, 10kV and above, play a key role in all kinds of power plants, mainly used to drive high-power equipment. Their high efficiency and reliability are suitable for the harsh working conditions of power plants.The reasonable selection and maintenance directly affect the economy and safety of power plant operation.

Description

Technical Parameters

Brief Introduction

This series motor, its efficiency indicators can meet level 3 energy efficiency, i.e. IE3, and also can meet level 4 energy efficiency, i.e. IE4, which are specified in Chinese standard GB 755 and in international standard IEC 60034.

Specific requirements for high-voltage AC motors in power plants

1. Electrical performance requirements

Startup Features:

- The starting current should be limited to 5-7 times the rated current to avoid grid impact (using soft start, variable frequency or hydraulic coupling).
- High starting torque (e.g. induced draft fan requires 150%~200% rated torque).
- Efficiency and Energy Efficiency:
- Compliant with IE3 (high efficiency) or IE4 (ultra high efficiency) standards, the full load efficiency is usually required to be ≥ 95%.
- Low no-load loss, optimized iron core material and winding design.

Power factor:

- Asynchronous motors require ≥ 0.85 (which can be improved through capacitor compensation or synchronous motors).

2. Mechanical structure requirements

Bearing System:

- Large motors use **sliding bearings** (such as feed water pump motors) or insulated bearings (to prevent shaft current corrosion).
- The lubrication system needs to adapt to continuous operation (such as forced lubrication or automatic grease supply).

Dynamic balance of rotor:

- Vibration velocity value ≤ 2.8mm/s(GB/T 10068 standard), to avoid impact on load machinery.

Explosion proof and anti-corrosion:

- The dust area of coal-fired power plants requires explosion-proof design (Ex d IIC T4), and the desulfurization area requires acid and alkali resistant coating.



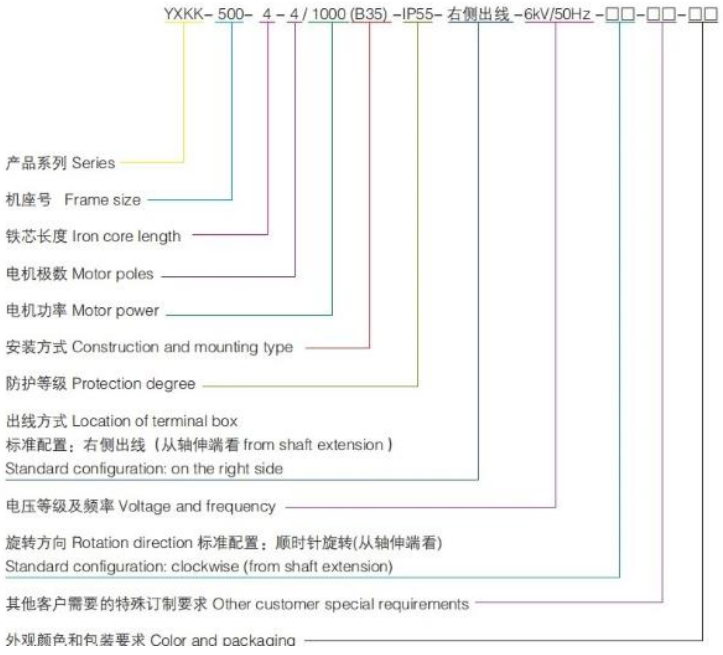


The core characteristics of high voltage ac power plant motor

High voltage level
-Common voltages: 6kV, 10kV (domestic), 3.3kV, 6.6kV (international)
-High insulation requirements: using multi-layer mica tape and vacuum pressure impregnation (VPI) process, the insulation level is usually F level (155 ℃) or H level (180 ℃), with high temperature resistance and corona resistance.
High power output
-Wide power range (200kW~50MW), directly drives large inertia loads (such as fans and pumps) without the need for deceleration devices.
High reliability design
-Protection level: IP54 (dust-proof and splash proof) or IP55 (waterproof), suitable for humid/dusty environments.
Cooling method:
-**Air cooling**(IC611/IC616): Forced air cooling, simple structure.
-Water cooling (IC81W): Closed loop water cooling, used for high heat load motors.

The design of high-voltage motors in power plants needs to balance performance, reliability, and cost, and their technical parameters directly affect the overall energy efficiency and safe operation of the power plant.Therefore, in order to accurately select the optimal high-voltage motor, our technical team needs to have a clear understanding of the equipment's load characteristics, overload requirements, environmental temperature, altitude, and other usage conditions.

Parameters



Characteristic letters	First number	Second number

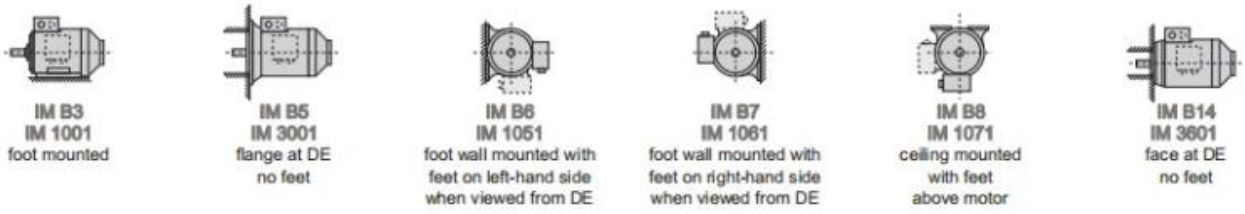
IP	5	5

1st number	Brief description
2	Against solid objects>12mm
4	Against solid objects>1mm
5	Dust-protected
6	Dust-tight

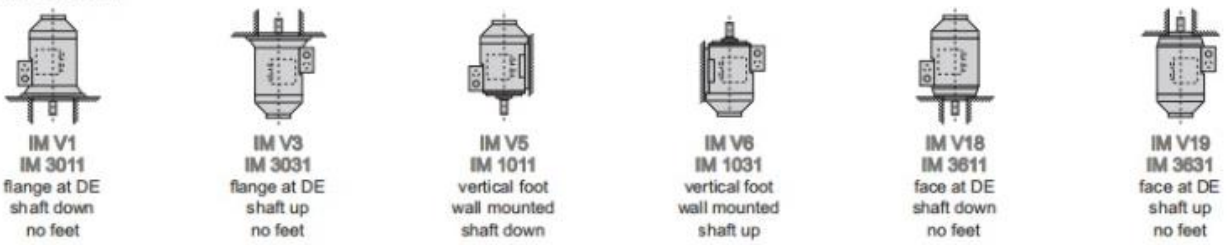
2nd number	Brief description
3	Against spraying water
4	Against splashing water
5	Against water jets
6	Against heavy seas

Frame size	External fan		Inner fan
	4 poles and above	2 poles	
355	Basin type centrifugal fan, bidirectional rotation	Propeller centrifugal fan, unidirectional rotation, please note when ordering	Radial centrifugal fan bidirectional rotation

Horizontal shaft:



Vertical shaft:



Specifications of YKK Series High Voltage Motor,6KV									
Model	Power kW	Current A	Speed r/min	Eff. %	P.F. cos中	Ist	Tst	Tmax.	Weight kg
						In	Tn	Tn	
YKK315-2	200	24.7	2976	91.6	0.85	7.0	0.6	2.0	2440
YKK315-2	220	27.2	2978	91.7	0.85	7.0	0.6	2.0	2510
YKK315-2	250	30.8	2976	91.8	0.85	7.0	0.6	2.0	2580
YKK315-2	280	34.5	2975	92.0	0.85	7.0	0.6	2.0	2650
YKK355-2	315	38.1	2978	92.4	0.86	7.0	0.6	2.0	2740
YKK355-2	355	42.8	2978	92.7	0.86	7.0	0.6	2.0	2790
YKK355-2	400	48.1	2978	93.0	0.86	7.0	0.6	2.0	2850
YKK355-2	450	54.0	2978	93.3	0.86	7.0	0.6	2.0	2905
YKK400-2	500	59.1	2981	93.6	0.87	7.0	0.6	2.0	3445
YKK400-2	560	66.0	2980	93.8	0.87	7.0	0.6	2.0	3580
YKK400-2	630	74.1	2981	94.0	0.87	7.0	0.6	2.0	3640
YKK400-2	710	83.5	2981	94.1	0.87	7.0	0.6	2.0	3790
YKK450-2	800	93.8	2984	94.3	0.87	7.0	0.6	2.0	4770
YKK450-2	900	105.3	2984	94.5	0.87	7.0	0.6	2.0	4875
YKK450-2	1000	116.9	2983	94.6	0.87	7.0	0.6	2.0	5015
YKK450-2	1120	130.8	2983	94.7	0.87	7.0	0.6	2.0	5170
YKK500-2	1250	144.0	2986	94.9	0.88	7.0	0.6	2.0	5940
YKK500-2	1400	161.1	2985	95.0	0.88	7.0	0.6	2.0	6145
YKK500-2	1600	184.0	2985	95.1	0.88	7.0	0.6	2.0	6365
YKK500-2	1800	206.7	2985	95.2	0.88	7.0	0.6	2.0	6565
YKK560-2	2000	229.2	2986	95.4	0.88	7.0	0.6	2.0	8760
YKK560-2	2240	256.5	2987	95.5	0.88	7.0	0.6	2.0	8960
YKK560-2	2500	285.9	2985	95.6	0.88	7.0	0.6	2.0	9400
YKK560-2	2800	320.3	2986	95.6	0.88	7.0	0.6	2.0	9570
YKK630-2	3150	355.9	2989	95.7	0.89	7.0	0.6	2.0	10710
YKK630-2	3550	400.6	2988	95.8	0.89	7.0	0.6	2.0	11270
YKK630-2	4000	451.0	2988	95.9	0.89	7.0	0.6	2.0	11610
YKK630-2	4500	506.8	2988	96.0	0.89	7.0	0.6	2.0	12010
YKK315-4	200	24.6	1483	92.1	0.85	6.5	0.7	2.0	1975
YKK315-4	220	27.0	1484	92.2	0.85	6.5	0.7	2.0	2020

YKK315-4	250	30.7	1483	92.3	0.85	6.5	0.7	2.0	2170

Model	Power kW	Current A	Speed r/min	Eff. %	P.F. cos.ϕ	Ist	Tst	Tmax.	Weight kg
						In	Tn	Tn	
YKK400-4	500	59.9	1487	93.4	0.86	6.5	0.7	2.0	3270
YKK400-4	560	66.9	1487	93.6	0.86	6.5	0.7	2.0	3355
YKK400-4	630	75.1	1487	93.8	0.86	6.5	0.7	2.0	3540
YKK400-4	710	84.5	1486	94.0	0.86	6.5	0.7	2.0	3630
YKK450-4	800	93.8	1490	94.3	0.87	6.5	0.7	2.0	4215
YKK450-4	900	105.4	1490	94.4	0.87	6.5	0.7	2.0	4305
YKK450-4	1000	117.0	1489	94.5	0.87	6.5	0.7	2.0	4545
YKK450-4	1120	130.9	1489	94.6	0.87	6.5	0.7	2.0	4715
YKK500-4	1250	145.8	1490	94.8	0.87	6.5	0.7	2.0	5980
YKK500-4	1400	163.2	1490	94.9	0.87	6.5	0.7	2.0	6105
YKK500-4	1600	186.3	1490	95.0	0.87	6.5	0.7	2.0	6430
YKK500-4	1800	209.3	1490	95.1	0.87	6.5	0.7	2.0	6640
YKK560-4	2000	229.5	1492	95.3	0.88	6.5	0.7	2.0	8410
YKK560-4	2240	256.7	1491	95.4	0.88	6.5	0.7	2.0	8695
YKK560-4	2500	286.2	1491	95.5	0.88	6.5	0.7	2.0	9220
YKK560-4	2800	320.3	1490	95.6	0.88	6.5	0.7	2.0	9515
YKK630-4	3150	359.5	1493	95.8	0.88	6.5	0.7	2.0	11885
YKK630-4	3550	405.2	1492	95.8	0.88	6.5	0.7	2.0	12410
YKK630-4	4000	456.1	1492	95.9	0.88	6.5	0.7	2.0	13125
YKK630-4	4500	513.1	1492	95.9	0.88	6.5	0.7	2.0	13615
YKK315-6	160	20.8	986	91.2	0.81	6.0	0.7	2.0	1975
YKK315-6	185	24.0	987	91.5	0.81	6.0	0.7	2.0	2100
YKK315-6	200	25.9	986	91.8	0.81	6.0	0.7	2.0	2165
YKK315-6	220	28.4	986	92.0	0.81	6.0	0.7	2.0	2235
YKK355-6	250	32.2	989	92.2	0.81	6.0	0.7	2.0	2640
YKK355-6	280	36.0	988	92.5	0.81	6.0	0.7	2.0	2700
YKK355-6	315	40.3	988	92.8	0.81	6.0	0.7	2.0	2800

YKK355-6	355	45.3	987	93.0	0.81	6.0	0.7	2.0	2850
YKK400-6	400	50.4	988	93.1	0.82	6.0	0.7	2.0	3390
YKK400-6	450	56.5	989	93.4	0.82	6.0	0.7	2.0	3490
YKK400-6	500	62.6	989	93.7	0.82	6.0	0.7	2.0	3600

Model	Power kW	Current A	Speed r/min	Eff. %	P.F. cos.ϕ	Ist	Tst	Tmax.	Weight kg
						In	Tn	Tn	
YKK500-6	1000	121.1	992	94.6	0.84	6.0	0.7	2.0	5740
YKK500-6	1120	135.5	992	94.7	0.84	6.0	0.7	2.0	5940
YKK500-6	1250	150.9	991	94.9	0.84	6.0	0.7	2.0	6355
YKK500-6	1400	168.8	991	95.0	0.84	6.0	0.7	2.0	6555
YKK560-6	1600	188.2	993	95.1	0.86	6.5	0.7	2.0	8490
YKK560-6	1800	211.6	993	95.2	0.86	6.5	0.7	2.0	8750
YKK560-6	2000	234.6	993	95.4	0.86	6.5	0.7	2.0	9235
YKK560-6	2240	262.4	993	95.5	0.86	6.5	0.7	2.0	9475
YKK630-6	2500	292.9	994	95.5	0.86	6.5	0.7	2.0	11795
YKK630-6	2800	327.7	994	95.6	0.86	6.5	0.7	2.0	12260
YKK630-6	3150	368.3	994	95.7	0.86	6.5	0.7	2.0	12940
YKK630-6	3550	414.6	994	95.8	0.86	6.5	0.7	2.0	13385
YKK355-8	200	28.3	740	91.9	0.74	5.5	0.8	2.0	2720
YKK355-8	220	31.1	740	92.1	0.74	5.5	0.8	2.0	2770
YKK355-8	250	34.8	739	92.2	0.75	5.5	0.8	2.0	2910
YKK355-8	280	38.4	739	92.4	0.76	5.5	0.8	2.0	3010
YKK400-8	315	40.9	740	92.7	0.80	5.5	0.8	2.0	3330
YKK400-8	355	46.0	740	92.8	0.80	5.5	0.8	2.0	3440
YKK400-8	400	51.7	740	93.0	0.80	5.5	0.8	2.0	3550
YKK400-8	450	58.1	740	93.1	0.80	5.5	0.8	2.0	3665
YKK450-8	500	64.3	743	93.6	0.80	5.5	0.8	2.0	4310
YKK450-8	560	71.8	742	93.8	0.80	5.5	0.8	2.0	4420
YKK450-8	630	80.7	743	93.9	0.80	5.5	0.8	2.0	4660
YKK450-8	710	90.9	742	94.0	0.80	5.5	0.8	2.0	4870

YKK500-8	800	100.9	743	94.2	0.81	6.0	0.8	2.0	5775
YKK500-8	900	113.4	743	94.3	0.81	6.0	0.8	2.0	5960
YKK500-8	1000	125.8	743	94.4	0.81	6.0	0.8	2.0	6255
YKK500-8	1120	140.8	743	94.5	0.81	6.0	0.8	2.0	6520
YKK560-8	1250	154.9	743	94.7	0.82	6.0	0.8	2.0	8210
YKK560-8	1400	173.3	743	94.8	0.82	6.0	0.8	2.0	8530
YKK560-8	1600	197.8	743	94.9	0.82	6.0	0.8	2.0	9160
YKK560-8	1800	222.3	744	95.0	0.82	6.0	0.8	2.0	9370
YKK630-8	2000	243.8	744	95.1	0.83	6.0	0.8	2.0	11105

Model	Power kW	Current A	Speed r/min	Eff. %	P.F. cos.ϕ	Ist	Tst	Tmax.	Weight kg
						In	Tn	Tn	
YKK400-10	250	34.6	591	91.5	0.76	5.5	0.8	2.0	3405
YKK400-10	280	38.7	591	91.7	0.76	5.5	0.8	2.0	3465
YKK400-10	315	43.3	591	92.1	0.76	5.5	0.8	2.0	3585
YKK400-10	355	48.7	592	92.3	0.76	5.5	0.8	2.0	3705
YKK450-10	400	54.7	594	92.6	0.76	5.5	0.8	2.0	4345
YKK450-10	450	61.5	593	92.7	0.76	5.5	0.8	2.0	4450
YKK450-10	500	68.1	593	93.0	0.76	5.5	0.8	2.0	4655
YKK450-10	560	76.2	593	93.1	0.76	5.5	0.8	2.0	4860
YKK500-10	630	83.4	592	93.2	0.78	5.5	0.7	1.8	5720
YKK500-10	710	93.8	593	93.4	0.78	5.5	0.7	1.8	5900
YKK500-10	800	105.3	593	93.7	0.78	5.5	0.7	1.8	6170
YKK500-10	900	118.4	593	93.8	0.78	5.5	0.7	1.8	6440
YKK560-10	1000	128.1	593	93.9	0.80	5.5	0.7	1.8	8360
YKK560-10	1120	143.2	593	94.1	0.80	5.5	0.7	1.8	8600
YKK560-10	1250	159.3	593	94.4	0.80	5.5	0.7	1.8	9070
YKK560-10	1400	178.2	594	94.5	0.80	5.5	0.7	1.8	9285
YKK630-10	1600	200.9	594	94.6	0.81	5.5	0.7	1.8	11180
YKK630-10	1800	225.8	594	94.7	0.81	5.5	0.7	1.8	12165
YKK630-10	2000	250.6	594	94.8	0.81	5.5	0.7	1.8	12870
YKK630-10	2240	280.4	594	94.9	0.81	5.5	0.7	1.8	13455
YKK450-12	315	45.7	493	92.1	0.72	5.5	0.7	1.8	4515
YKK450-12	355	51.4	493	92.3	0.72	5.5	0.7	1.8	4620

YKK450-12	400	57.7	493	92.6	0.72	5.5	0.7	1.8	4770
YKK450-12	450	64.9	492	92.7	0.72	5.5	0.7	1.8	4870
YKK500-12	500	70.8	493	93.1	0.73	5.5	0.7	1.8	5755
YKK500-12	560	79.2	494	93.2	0.73	5.5	0.7	1.8	5920
YKK500-12	630	89.0	494	93.3	0.73	5.5	0.7	1.8	6205
YKK500-12	710	100.2	493	93.4	0.73	5.5	0.7	1.8	6475
YKK560-12	800	108.1	494	93.7	0.76	5.5	0.7	1.8	8415
YKK560-12	900	121.5	494	93.8	0.76	5.5	0.7	1.8	8795
YKK560-12	1000	134.8	494	93.9	0.76	5.5	0.7	1.8	9260
YKK560-12	1120	150.9	494	94.0	0.76	5.5	0.7	1.8	9490
YKK630-12	1250	168.2	495	94.1	0.76	5.5	0.7	1.8	11060

Technical Specifications

Type:YKK/YXKK/YPKK
-Three-phase, 50/60 Hz
- Voltage: 380~11000 V
- Rated output: up to 12500 kW
- Number of poles: 2,4,6,8,10,12
- Frame size: 350~1000mm
- Cast aluminium squirrel cage for rotor
- Degree of protection:IP54/IP55(Totally enclosed)
- Continuous Duty: S1
- Cooling:IC611/CACA;IC616
- Continuous Duty: S1
- Insulation: F with class (120ºC) temperature rise
- Continuous Duty: S1
- With thermal protection PT100(3-wire)
- Roller bearings for maximum load capacity
- Other optional features under requests from customers

Order notice

1. Sliding bearing

The ambient air temperature of electric motors using sliding bearings should not be lower than 0 deg. C

2. Air-water cooler

The ambient air temperature of electric motors using air water coolers should not be lower than 0 deg. C.For motors with air-water coolers, the cooling water temperature at the inlet of the cooler should not exceed +25 deg.C (according to the natural environment in China, if the condition of Not Exceeding 25 deg.C cannot be met, the maximum cooling water temperature should not exceed +33 deg.C), nor should it be lower than+5 ℃.
Note: if there are special requirements for environmental temperature and altitude, please indicate them before placing order.

3. Starting requirements

When starting the motor with a load, it is necessary to ensure that the terminal voltage during the motor starting process is not less than 85% of the rated voltage.
The motor is allowed to start continuously twice in actual cold state, or once in hot state. The motor should naturally stop between the two starts, and additional restarts should be carried out after the motor has completely cooled til same as room temperature.
Note: if the load is a reciprocating compressor, ventilation fan with large inertia, or crusher, please indicate it before placing order.

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