

中频无刷同步发电机

Medium-Frequency Brushless Synchronous Alternator

中频无刷同步发电机概述

TFZPW-TH系列中频无刷同步发电机是专门为飞机场地面交流电站配套设计的，由内燃机或工频电动机作动力，组成400Hz中频或变频发电机组，为大型飞机作交流起动或通电检查。目前除国内部分机场选用本系列发电机外，部分规格还出口到美国、法国等国家的大型航空公司。

1 主要特点及性能指标

- a 输出电压波形好，从空载到满载，相电压波形总谐波含量不大于3%，单个谐波含量不大于2%，偏离系数不大于4%；
- b 电压调制不大于1%；
- c 15%不对称负载时三相电压不平衡不大于2%，25%不对称负载时三相电压不平衡不大于5%；
- d 不对称负载时三相电压过零点相位差在 $120 \pm 2^\circ$ 范围内；
- e 稳态电压调整率不超过 $\pm 1\%$ ；
- f 突变额定功率负载时的瞬态电压调整率不超过 $\pm 15\%$ 或 $\pm 20\%$ ，稳定时间不超过0.5s；

Brief of medium-frequency brushless synchronous alternator

Medium-frequency brushless synchronous Alternators type TFZPW-TH (hereafter Alternator for Short) are specially designed and constructed to form a complete set with the precision electric power plant (AC electric power plant) of airport. It is usually powered by internal-combustion-engine and is used to supply 400Hz medium-frequency electric source for ac starting or energization checking large aircraft on the airport ground.

1 Main character and performance

- a The wave form of output voltage is stable, from no-load to full-load, the total harmonic capacity of phase voltage wave form is not more than 3%, each harmonic capacity is not more than 2%, deviation is not more than 4%;
- b Voltage modulation is not more than 1%;
- c At 15% asymmetrical load, the unbalance of 3-phase voltage is not more than 2% ; At 25% asymmetrical load, the unbalance of 3-phase voltage is not more than 5%;
- d At the asymmetrical load phase shift on null point of the 3-phase voltage wave form shall be within $120 \pm 2^\circ$;
- e The stable voltage regulating ratio is not more than $\pm 1\%$;
- f The transient voltage regulating ratio at revulsion rated power load is not more than $\pm 15\%$ or $\pm 20\%$, the stable time is not more than 0.5s;



中频无刷同步发电机

Medium-Frequency Brushless Synchronous Alternator

- g) 全封闭轴承;
 - h) 双轴承支撑或单轴承支撑;
 - i) 带防尘罩或不带防尘罩;
 - j) 住发电机基波副绕组作为自动励磁功率源;
 - k) 励磁机定子有磁钢, 保证可靠起励建压.
- 2 型号 三相中频无刷同步发电机TFZPW
单相中频无刷同步发电机TFZPDW

3 使用环境

- a) 海拔高度不超过4000m;
- b) 环境温度-40℃ ~ +50℃;
- c) 环境空气相对湿度不大于95%;
- d) 有霉菌、盐雾和凝露。

4 基本参数见表1

5 外形安装尺寸见表2、表3、表4

- g totally enclosed bearing;
 - h double bearing sustain or one bearing sustain;
 - i with droop-proof or without droop-proof;
 - G totally enclosed bearing;
 - h double bearing sustain or one bearing sustain;
 - i with droop-proof or without droop-proof;
 - j Main alternator secondary winding is as the self-exciting excitation power source;
 - k There is Sm-Co magnetic steel on the exciter stator, it can produce voltage stably and reliably;
- 2 Type
3-phase medium-frequency brushless synchronous alternator TFZPW
Single-phase medium-frequency brushless synchronous alternator TFZPDW
- 3 Environment
a Altitude: $\leq 4000\text{m}$;
b Temperature: $-40^{\circ}\text{C} \sim +50^{\circ}\text{C}$;
c Humidity: $\leq 95\%$;
d There is mildew, salt fog and condensation.
- 4 Basic parameter refer the table 1
5 The outline mounting dimension refer the bale 2, table 3, table 4

表1 Table 1

代号 Code	额定参数 Rated parameter					绝缘等级 Insulation	接线方法 Connection	重量 Weight (kg)	备注 Annotations
	功率 Power (kw)	电压 Voltage (v)	功率因数 Power factor	频率 Frequency (Hz)	转速 Speed (r/min)				
B1291	50	200	0.8(滞后)Lagging	400	2000	F	三相四线 3 Phase 4 Wires	650	
B1546	50	208	0.8(滞后)Lagging	400	2000	F	三相四线 3 Phase 4 Wires	533	
B1246	75	200	0.8(滞后)Lagging	400	2000	F	三相四线 3 Phase 4 Wires	580	
B1283	75	200	0.8(滞后)Lagging	400	2000	F	三相四线 3 Phase 4 Wires	410	
B1544	75	200	0.8(滞后)Lagging	400	2000	F	三相四线 3 Phase 4 Wires	560	
B1558	75	200	0.8(滞后)Lagging	400	2000	F	三相四线 3 Phase 4 Wires	530	单轴承 Single bearing
B1284	90	200	0.8(滞后)Lagging	400	2000	F	三相四线 3 Phase 4 Wires	512	
B1298	90	200	0.8(滞后)Lagging	400	2000	F	三相四线 3 Phase 4 Wires	690	
B1550	40	230	0.8(滞后)Lagging	400	2000	F	单相一 Single Phase	488	
B1552	96	200	0.8(滞后)Lagging	400	2000	F	三相四线 3 Phase 4 Wires	622	单轴承 Single bearing
B1557	112	200	0.8(滞后)Lagging	400	2000	F	三相四线 3 Phase 4 Wires	595	
B1559	112	200	0.8(滞后)Lagging	400	2000	F	三相四线 3 Phase 4 Wires	622	单轴承 Single bearing
B1565	144	200	0.8(滞后)Lagging	400	2000	F	三相四线 3 Phase 4 Wires	650	
B1548	100	208	0.8(滞后)Lagging	400	2400	F	三相四线 3 Phase 4 Wires	650	
B1560	100	208	0.8(滞后)Lagging	400	2400	F	三相四线 3 Phase 4 Wires	650	
B1561	12	200	0.8(滞后)Lagging	400	3000	F	三相四线 3 Phase 4 Wires	128	
B1547	30	208	0.8(滞后)Lagging	400	3000	F	三相四线 3 Phase 4 Wires	200	
B1551	40	200	0.8(滞后)Lagging	400	4000	H	三相四线 3 Phase 4 Wires	162	花键轴伸 Integral key shaft extension
B1564	90	200	0.9(滞后)Lagging	400	1500	F	三相四线 3 Phase 4 Wires	615	
B1569	90	200	0.8(滞后)Lagging	400	1500	F	三相四线 3 Phase 4 Wires	615	
B1568	90	200	0.8(滞后)Lagging	400	1500	F	三相四线 3 Phase 4 Wires	690	
B1567	112	200	0.8(滞后)Lagging	400	1500	F	三相四线 3 Phase 4 Wires	805	
B1285	200	400	0.8(滞后)Lagging	400	1500	F	三相四线 3 Phase 4 Wires	1520	

中频无刷同步发电机

Medium-Frequency Brushless Synchronous Alternator

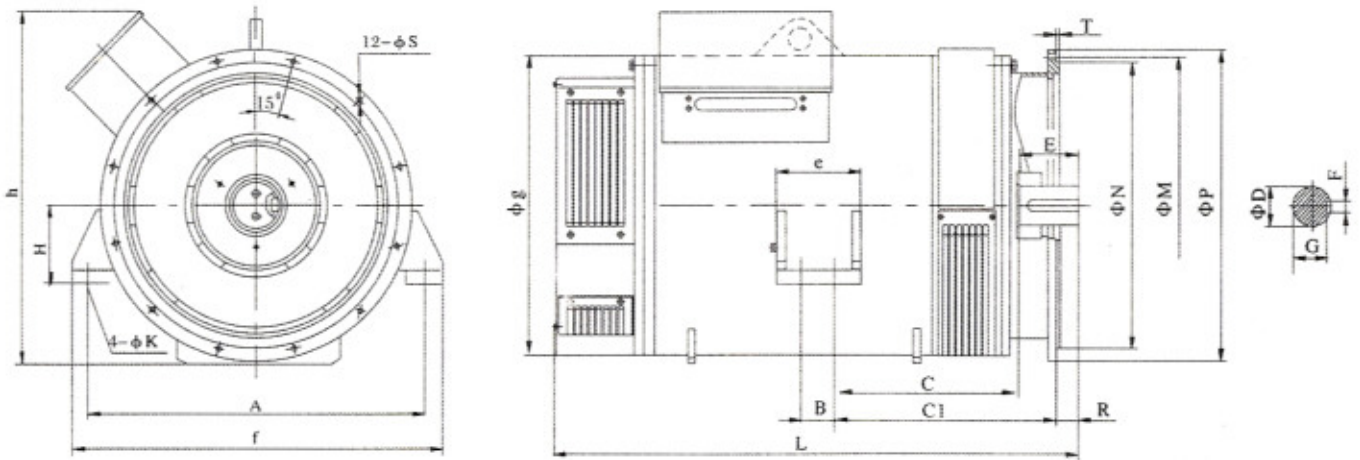


表2 双轴承支撑

Table 2 Double-bearing sustain

代号 CODE	A	B	C1	C	E	R	L	H	h	e	f	K	D	G	F	P	N	M	S	T
B1291			314.5		90	-17	790		625							493	447.7	466.7	11	7
B1546			316.5		90	23.5	900		635							555	511.18			
B1246			350		100	0	715		615							552	511.17	530.2		
B1283	580	100			135	35	762	125	625	200	640		70	62.5	20	576	532	552		6
B1544			332		100	18	890		625							552	511.17	530.2		
B1284			350		135	35	812		615							552	511.17	530.2		
B1298					100	0	775													
B1550	610	60	365		80	13	800	140	635	152	670		60	53	18	490	447.7	466.7	12	5
B1557	580				135	35	890	125	618		640		70	62.5		552				
B1565	610	100	350				910	200	680	200	690		75	67.5	20	600				
B1548																	511.17	530.2		
B1560	610	60	396		105	39	960	140	635	152	670		70	62.5		555				
B1547	356	178		133	82	10	585	225	510	225	436		48	42.5	14	400	361.95	381		6
B1564					100	18	825		690		754						532	552		
B1569								125		200			80	71	22	600				
B1568					105	38	890		685		750						511.18	530.2		
B1567							970													
B1285	610	500	406		170	18	1370	355				28	90	81	25	560	511.18	530	13	
B1561	279	112		169	46		515	180	410	185	346	15	42	37	12					

中频无刷同步发电机

Medium-Frequency Brushless Synchronous Alternator

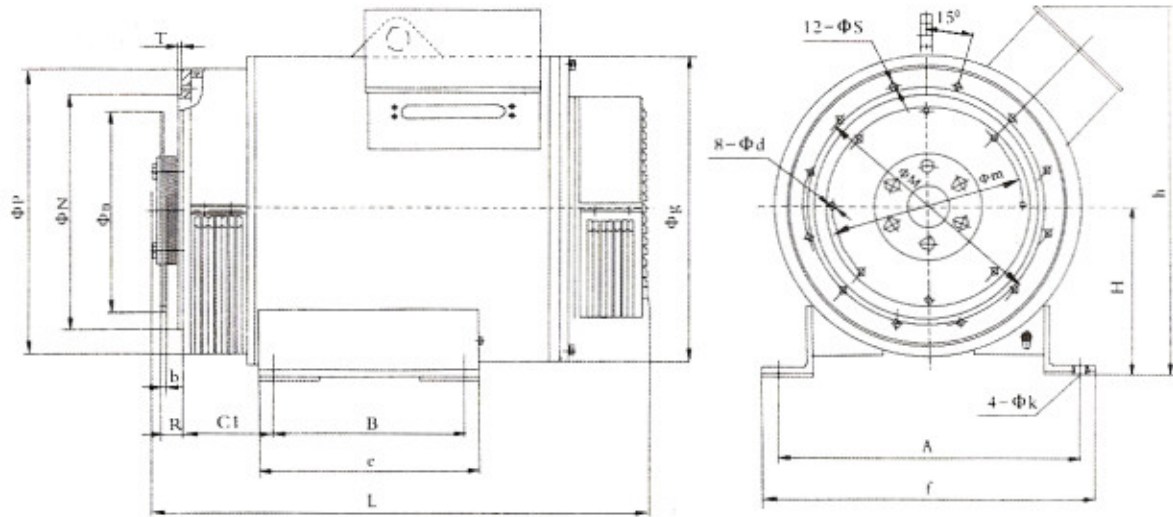


表3 单轴承支撑

Table 3 single-bearing sustain

代号 CODE	A	B	C1	E	R	L	H	h	e	f	K	P	N	M	ϕS	n	m	ϕd	b	T
B1558						750														
B1552	533.4	336.6	154	28	39.6		298.5	631	388	585	17.5	492	409.6	428.6	12	352.4	333.3	10.5	6	6
B1559						870														



中频无刷同步发电机

Medium-Frequency Brushless Synchronous Alternator

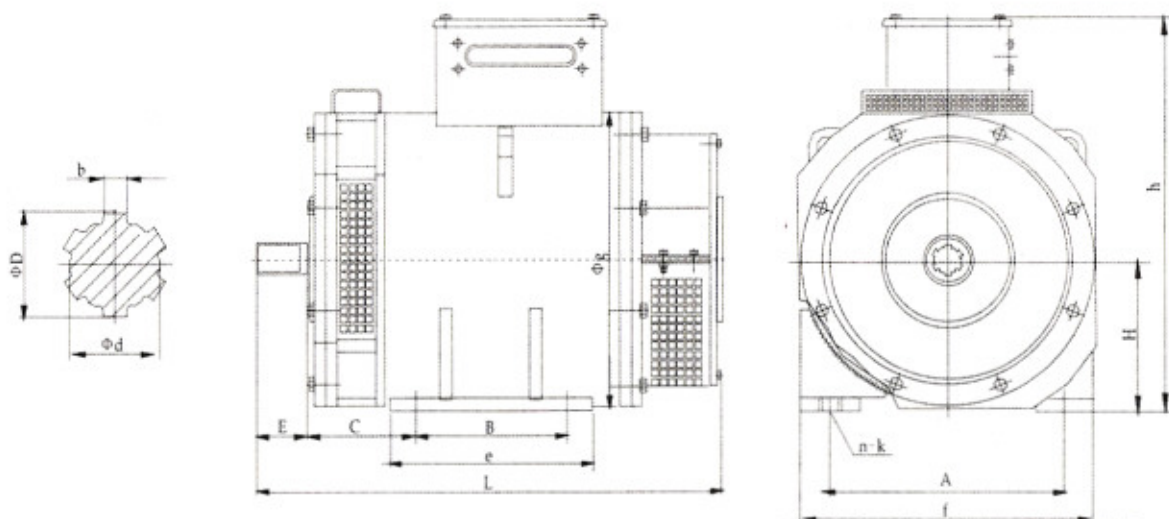


表4 花键轴伸

Table 4 Integral key shaft extension

代号 CODE	A	B	C	H	D	d	b	n-k	E	L	h	e	f
B1551	279	178	128	180	37	32	8	4-M20	60	555	475	238	350

