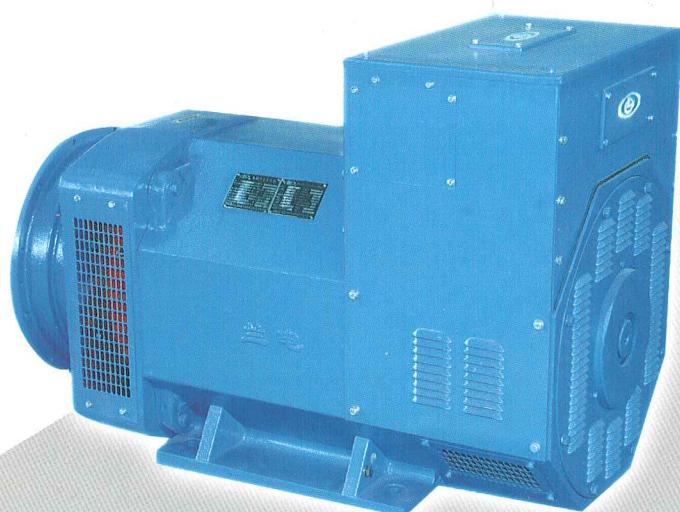


**T2W3-N 系列  
三相无刷同步发电机**

**T2W3-N Series Brushless Synchronous Alternator**



**兰州电机有限责任公司  
LANZHOU ELECTRIC CORPORATION**

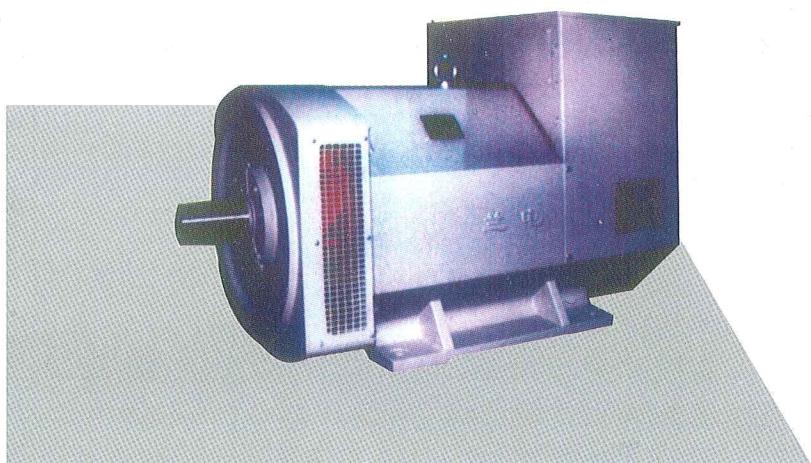
# T2W3-N 系列三相无刷同步发电机 T2W3-N Series Brushless Synchronous Alternator

## 简介

兰州电机股份有限公司(原兰州电机厂)是西北地区最大的制造电机和发电设备的国家大型一档企业，1994年在全国同行业中率先通过了ISO9001质量体系认证，同年进入国家认定的企业技术中心行列。公司现有职工五千余人，其中工程技术人员674人，5人享受政府专家津贴。公司占地面积58万平方米，拥有主要设备845台，具有国际先进水平的进口设备60台。公司生产的主要产品有：船用发电机、一般交流发电机、大中型交流电机、大中型直流电机、交流伺服主轴及步进电机、小型交流电动机、移动电站、柴油发电机组、高低压控制屏、中频双频双流特殊发电机、超高转差率电机、中小型水轮发电机组等。年综合生产能力达300万千瓦。“LD”牌系列产品性能卓越，质量优异，产品饮誉国内32个省、市自治区，并销往二十多个国家和地区。

## Briefing

Lanzhou Electric Corporation (Former, Lanzhou Electric Manufactory), a state first-grade enterprise, is one of the largest manufacturers that produces electric machines and generating equipments in Northwest of China. It first passed “ISO 9001 Quality Assurance System” Certification among the electrical machine industry in 1994, and ranked in the line of the “state-Confirmed Enterprise Tech-Center”. There are more than 5000 staff in our corporation, including 674 engineering technicians, of which 5 enjoy the specialist rewards of government. The corporation covers an area of 58ha, and has 845 sets of advanced equipment, of which 60 sets are imported equipment with international level. The main products made by corporation include medium/large-sized ac motor, medium/large-sized dc motor, alternator for general purpose, frequency-control variable-speed motor, ac servo motor, main spindle motor & step-motor, diesel-engine generator set, high/low-voltage control board, medium/double-frequency & double-current generator for special use, super-slip motor, marine alternator and small/medium-sized water wheel generator set etc. The annual comprehensive production capacity comes up to 3000MW. The products of “LD” series are excellent in quality and outstanding in performance, and enjoy high reputation at home and abroad, which has been sold to 32 provinces, cities and autonomous regions and exported to more than 20 countries and regions.



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### 概 述

T2W3—N系列三相无刷同步发电机是我公司近年来自行开发的陆用交流同步发电机。该系列发电机符合GB755《旋转电机 定额和性能》，等同采用IEC60034: 2004《旋转电机 定额和性能》。

该系列发电机为三相无刷同步发电机。发电机的励磁方式为无刷自励方式。机组起动后，由发电机剩磁建立端电压，当转速到达额定转速附近时，自动电压调节器利用剩磁电压给励磁机提供励磁建立额定电压。发电机带负载运行后，自动电压调节器通过控制晶闸管给励磁机励磁进而控制发电机输出电压的稳定。

### 结构特点

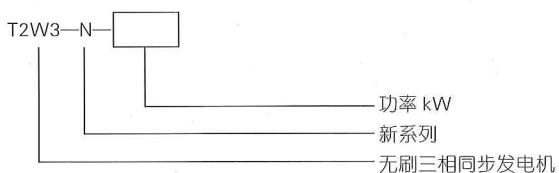
T2W3—N系列发电机结构形式为双轴承(IMB3)或单轴承(IMB15)、带底脚的卧式结构，外壳防护等级为IP21。通风方式为自扇冷式。全系列电机采用F级或H级绝缘。

定子采用八方或圆形铸铁机座，电枢绕组为带有中性点引出、星形连接的三相绕组。

转子铁心由整圆凸极冷扎钢板冲片叠压后本体绕线而成，极间用撑块固定，坚固可靠，散热性好。所有转子均设阻尼绕组。转子各部分机械强度按最高转速为发电机额定转速的1.2倍而设计。双轴承电机转子轴伸为带有平键的圆柱型轴伸。电机与原动机对接宜用弹性联轴器，若用皮带轮传动时，拖动端轴承寿命将缩短。单轴承电机采用特制的叠片联轴器和过渡节(均符合SAE标准)与原动机对接。

自动电压调节器等部件安装在机座顶部出线盒中，安装调试方便。

#### 型号意义



#### 主要规格及参数

1 发电机及其励磁系统在下列环境条件下能正常工作。

1.1 海拔不超过1000m。

1.2 环境空气最高温度随季节而变化,不超过40℃。(自动电压调节器的环境空气最高温度不超过55℃)。

注：如发电机不在上述所指定的条件下使用时，则应按 GB755 的规定修正。

1.3 环境空气相对湿度不大于95%，并有凝露。

1.4 有霉菌、凝露、盐雾影响。

2. 额定电压400 V,三相四线制

3. 额定功率因数:0.8 (滞后)

4. 额定频率: 50Hz或60Hz

5. 电压整定范围大于:  $\pm 5\% U_n$

6. 稳态电压调整率不超过:  $\pm 1\%$

7. 瞬态电压调整率: 85% ~ 120%  $U_n$ ,  $\leq 1.5s$

8. 线电压波形正弦性畸变率:  $\leq 5\%$

9. 能在热态下过载10%运行1h

### General

T2W3—N Series Brushless Synchronous Alternator are a new alternator of brushless synchronous land use alternator developed by LEC itself in recent years. It conform to the related standard of IEC 60034 and GB755. T2W3—N Series alternator is three-phase brushless synchronous alternator. The excitation mode is brushless-self excitation. After alterator set started, alternator remanence establish terminal voltage, when alternator running speed reach to rated-speed around, alternator voltage regulator build up rated-voltage through remanence voltage exciting to exciter. After loaded operation, the exciter is exciting by automatic voltage regulator control of thyristor, so that keep output voltage stable.

### Main Features

T2W3—N Series Brushless Synchronous Alternator are two structures, it is double bearings(IMB3), single bearing(IMB15) with feet horizontal mount, protection degree is IP21. Cooling method is self-cool by fan. Insulation class is class F or class H. The frame is made of cast iron, the shape is octagonal or round, the armature windings is Y connection with neutral point draw forth wire.

The rotor iron core is made of round salient lamination of cold-press steel plate which is then wound on itself. Class F insulation glue was topped between the layers, and the poles are fixed with bracket blocks that make the rotor be possessed of sturdy, reliable and with good heat radiation performance. All of the rotor is equipped with damping windings. All parts of rotor mechanical strength is designed under condition of 1.2 times of rated speed. The end of shaft of double bearings motor is round with a flat key. Connection between alternator and engine fit flexibility coupler, if it is apply belt wheel, the bearing's life of drive end will be shorten. For the single bearing motor, apply of special lamination coupler and transit joint(comfort to SAE standard) between alternator and engine. Automatic voltage regulator and others parts mount in terminal box that put on the top of motor, it is convenient for maintain and installation.

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## T2W3-N Series Brushless Synchronous Alternator

### Type of Designation



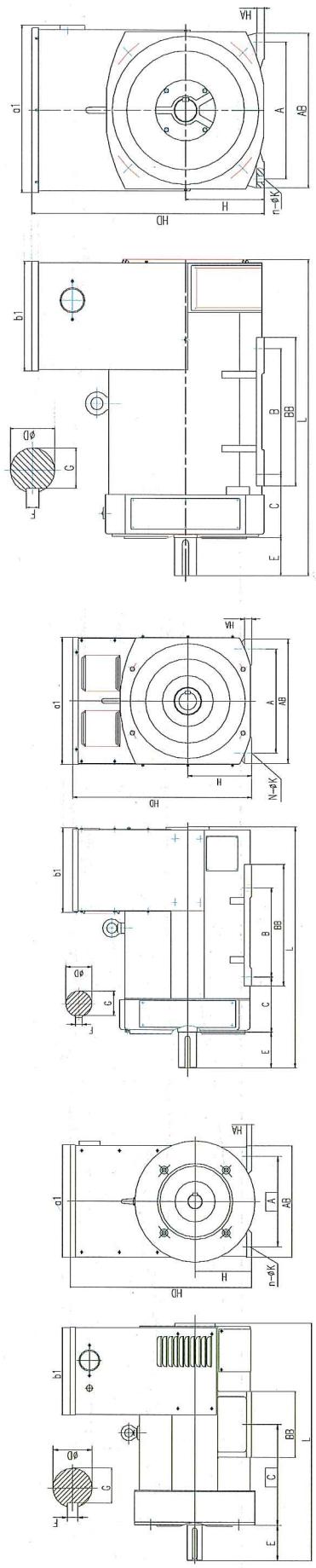
### Specification and Parameters

1. Alternator can normally running under the condition below:
  - 1.1 Altitude: ≤1000m
  - 1.2 Ambient temperature: ≤40°C(Automatic Voltage Regulator: ≤50°C )
  - 1.3 Relative Humidity in Air: 95%(at 25°C)
  - 1.4 Salt Spray, Condensed Dew and Mycete: affective
2. Rated Voltage: 400V, 3-phases and 4-wires
3. Rated Power Factor: 0.8(lag)
4. Rated Frequency: 50Hz/60Hz
5. Voltage Setting Range: ± 5% Un
6. Steady Voltage Setting Range: ± 1%
7. Transient Voltage Regulation: 85% ~ 120% Un, ≤1.5s
8. Sinusoid Wave Form Distortion of linear Voltage: ≤5%
9. 10% Overload in hot State Running: 1h

型号 Type	机座号 Frame No	额定容量 Rated output ( kVA )	额定功率 Rated power ( kW )	额定电流 Rated current ( A )	额定转速 Rated speed ( r/min )	效率 Efficiency ( % )	重量 Weight ( kg )
T2W3-N - 20	200S	25	20	36	1500	81	218
T2W3-N - 24		30	24	43.3	1500	84.0	235
T2W3-N - 30		37.5	30	54.1	1500	86.0	263
T2W3-N - 40	225M	50	40	72.2	1500	89	380
T2W3-N - 50		62.5	50	90.2	1500	90.0	420
T2W3-N - 64	225L	80	64	115	1500	90.2	460
T2W3-N - 75		93.8	75	135	1500	90.3	500
T2W3-N - 90	250S	112.5	90	162	1500	90.5	560
T2W3-N - 100	250L	125	100	180	1500	91.0	610
T2W3-N - 120		150	120	217	1500	91.0	660
T2W3-N - 150	315M	187.5	150	271	1500	92	1040
T2W3-N - 200		250	200	361	1500	92.5	1180
T2W3-N - 250	315M	312.5	250	451	1500	93	1370
T2W3-N - 300	315L	375	300	541	1500	93.5	1470
T2W3-N - 320		400	320	577	1500	93.5	1470
T2W3-N - 350	355M	437.5	350	631	1500	93.5	1500
T2W3-N - 400		500	400	721.5	1500	94.5	1650
T2W3-N - 450		562.5	450	811	1500	93.5	1700
T2W3-N - 500	355L	625	500	902	1500	94	1900
T2W3-N - 630	400M	787.5	630	1136	1500	94.4	2320
T2W3-N - 700		875	700	1263	1500	94	2480
T2W3-N - 800	400L	1000	800	1443	1500	95	2960
T2W3-N - 900		1125	900	1624	1500	95	3050

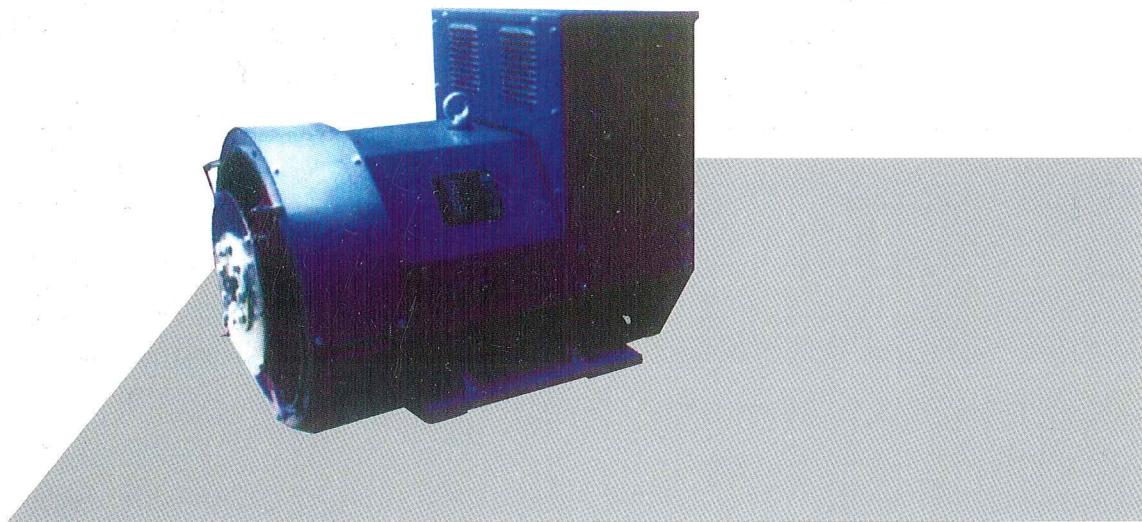
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外形及安装尺寸 Outline and Installation Dimensions  
 双轴承安装尺寸表 Double Bearings Alternator Installation dimension

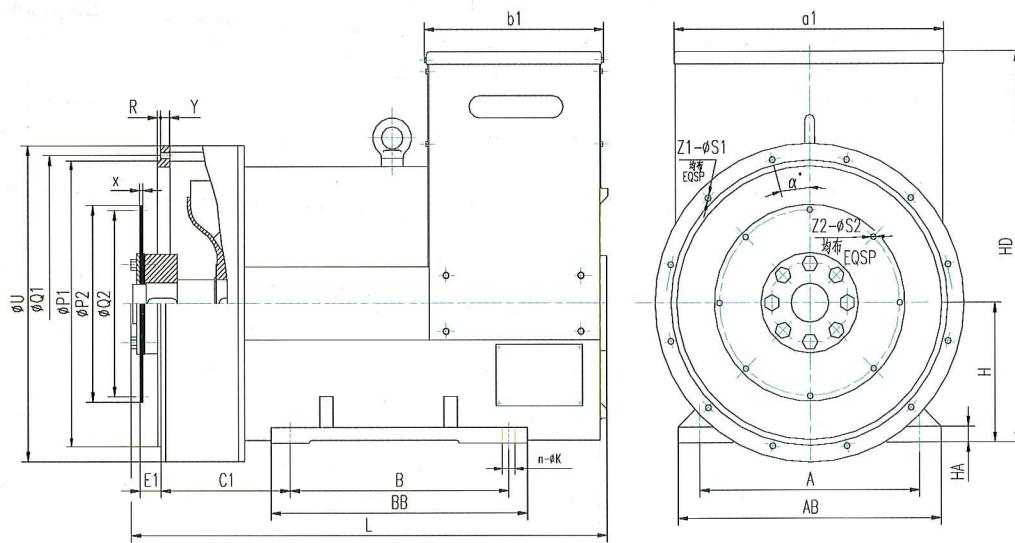


机座号 Frame	A	AB	B	BB	C	D	E	F	G	H	HA	HD	N-ΦK	L	a1	b1	
200S	279	370	0	200	292.5	48	110	14	42.5	160	12	535	2-Φ14	710	400	252	
225M	356	440	0	200	319	60		18	52	225	16	725	2-Φ19	865	470	355	
225L			159	260			140						4-Φ19	940			
250M	406	476	349	476	224	70		20	62.5	250	25	800	4-Φ24	970	520	450	
250L			406											1070			
														1240			
315M	508	620	457	558	254	95		25	86	315		900		1340	660	440	
315L			508	608			170				35						
355M	610	690	560	660	280	100				90	355		1005		1430	750	490
355L			630	730				28							1530		
400M	686	845	630	730	335	110		110		100	400	50	1145	4-Φ35	1610		
400L			800	900	115			210		105					820	1785	490

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**单轴承安装尺寸表**  
**Single Bearing Installation Dimension**



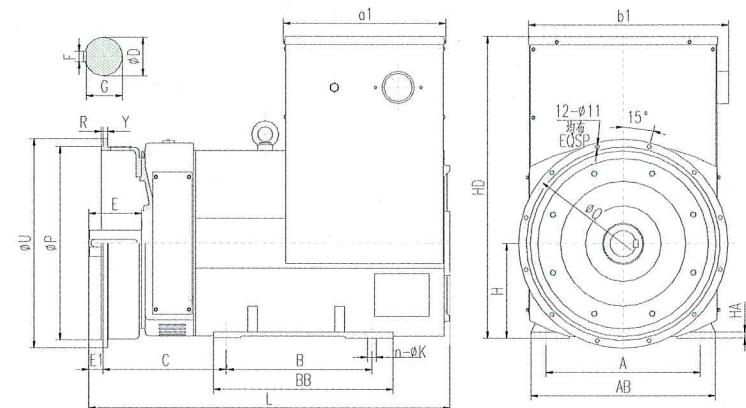
法兰式过渡接套 SAE • No · Flange Transit Joint	P1	Q1	Z1-S1	α
3	409.6	428.6	12-13	15
2	447.7	466.7	12-13	15
1	511.2	530.2	12-13	15
1/2	584.2	619.1	12-13	15
0	647.7	679.5	16-13	11.25

盘片式联轴器 SAE • No · Plate Coupler	P2	Q2	Z2-S2	E1
10	314.3	295.2	8-10.5	53.8
11.5	352.4	333.3	8-10.5	39.7
14	466.5	438.2	8-13.5	25.4
18	571.5	542.9	6-16.5	15.8

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机座号 Frame	法兰式过渡接套 SAE · No · Flange of transit Joint	盘片式联轴器 SAE · No · Plate Coupler	C1	X	R	Y	U	L			
200S	3	11.5	311				488	675			
225M	3	11.5	316	5	17	17	488	790			
	2						495				
	1	14	330				566				
	1	11.5	316				566				
225L	3						488	860			
	2						495				
	1										
	1	14	330								
250M	3	11.5	240	6	17	17	910	566			
	2										
	1										
	1	14	254.3								
250L	3	11.5	240				1010	566			
	2										
	1										
	1	14	254.3								
315M	2	11.5	294	9	8	28	1170	1255			
	1	14					1255				
315L	1/2 0						670				
355M	1/2	18	307			30	710	1340			
	0										
355L			317					1440			
400M			352					780 1455			

**双轴承轴承配SAE过渡节安装尺寸表**  
**Double Bearings fit SAE Transit Joint Installation Dimension**



机座号 Frame	法兰式过渡接套 S.A.E. No. Flange of Transit Joint	P	Q	Z1-S1	C	E1	R	Y	U	L	
200S	3	409.6	428.6	12-13	402.5	6	6	15	451	710	
225M					459	6	6	25	451	865	
225L					326	38	5	12	552	940	
250M					346	60	5	20	552	970	
250L	1	511.2	530.2							1070	
315M										1240	