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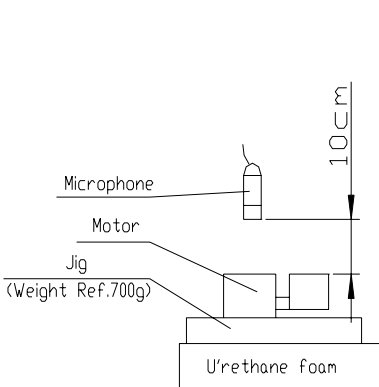
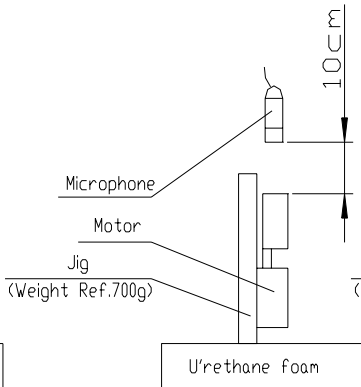
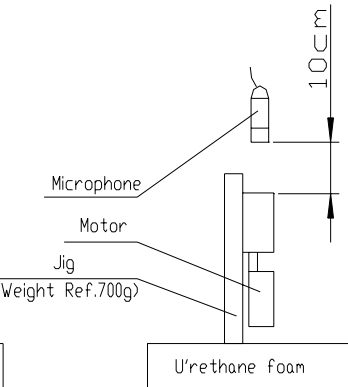
规格书

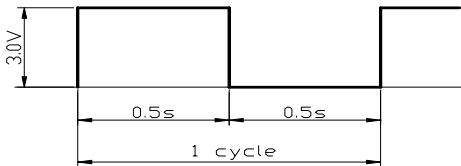
SPECIFICATION

客户信息	客户名称/Customer	
	客户料号/Part No.	
	客户承认签章 Customer Approved Signatures	

文件编号/Spec No.	KOTL-B-S030	
品名/Description	圆柱直流马达/Cylindrical DC motor	
型号/Part No.	Z4KL2B0030471	
设计/Designed	审核/Checked	批准/Approved
杨兰	龚锐	郑向超
2005.09.22	2005.09.22	2005.09.22

2005.09.22		说明书/Specification		编号/No KOTL-B-S030		代码/code:0		1/8	
型号/Model				Z4KL2B0030471					
1. 适用范围/General									
本说明书适用于圆筒式永磁直流电机 Z4KL2B0030471 型									
This specification applies to cylindrical permanent-magnetic motors DC model Z4KL2B0030471									
2. 使用条件/Operating condition									
项目/Item			规格/Specification			条件·备注/Condition remark			
2-1		额定电压 Rated voltage	3.0V DC						
2-2		额定负荷 Rated load	振子 Vibration weight			见外形图 As specified in outline drawing			
2-3		旋转方向 Rotation	CW,CCW(clockwise or anticlockwise)						
2-4		马达位置 Motor position	全方位 All position						
2-5		使用电压范围 Operating voltage	2.2～3.6V DC						
2-6		使用环境 Operating environment	-30 ～ 70℃, 常 湿 /Ordinary Humidity:65±20%RH			无水气凝结 No condensation of moisture			
2-7		保存环境 Storage environment	-40 ～ 80℃, 常 湿 /Ordinary Humidity:65±20%RH			无水气凝结 No condensation of moisture			
3. 测定条件/Measuring condition									
项目/Item			规格/Specification			条件·备注/Condition remark			
3-1		温度 Temperature	20±2℃						
3-2		湿度 Humidity	(63%～67%) RH						
3-3		位置 Motor position	轴向水平 Motor shaft horizontal			将马达固定在试验台上 Lock the motor in a test fixture			
标准测试条件为温度 20℃, 湿度 65%。如无疑异, 也可在温度 5～35℃、湿度 45～85%的条件下测试。马达测试时, 放置方向为轴向水平。/The measurement at 20℃ & 65%RH is standard. If the judgment is not questionable, recognize measurement at 5℃ to 35℃ & relative humidity 45% to 85%. Direction of motor is shaft horizontals									
4. 机械要求/Mechanical specification									
项目/Item			规格/Specification			条件·备注/Condition remark			
4-1		结构 Configuration	见外形图 As specified in outline drawing			Outline drawing No: Z4KL2B0030471			
4-2		外观 Appearance	不含有机械损坏及不充分的浸蚀等。 There shall be no evidence of mechanical damage and shall not have inadequate corrosion and so on			目测 (容许范围根据样品外形) Visual examination(allowable extent is based on boundary sample)			
4-3		轴向间隙 Shaft end play	0.05mm～0.2mm						

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4-4		振子固定力 Holding strength of vibration weight		49N (5kgf) Min					
5.性能特征/Performance and characteristics									
项目/Item		规格/Specification				条件·备注/Condition remark			
5-1		额定转速 Rated speed		10,500±2,500rpm				在额定电压和额定负载（振子）下。 At rated voltage and rated load (vibration weight).	
5-2		额定电流 Rated current		70 mA Max					
5-3		堵转电流 Stall current		90 mA Max				在额定电压下 At rated voltage	
5-4		起动电压 Starting voltage		1.7V DC Max				在额定负载（振子）下电枢的任意位置。 At rated load (vibration weight) any position of rotor.	
5-5		绝缘电阻 Insulation resistance		1MΩ Min				在 100V 直流下，端子和机壳间 At DC 100V between Terminal and case.	
5-6		端子阻抗 Terminal resistance		41Ω (±20%)				在 20℃ 下 At 20℃	
5-7		机械噪音 Mechanical noise		小于 50 分贝.A 计权 50dB(A)Max					
		在额定电压、额定负载（振子）下。 At rated voltage and rated load (vibration weight). 背景噪音：不大于 28dB.A 计权 Back ground noise 28dB(A) Max 测试仪器：B&k Measuring instruments: B&k 夹具重量：700g Weight of jig:700g  Fig. A  Fig. B  Fig. C							

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6. 可靠性/Reliability									
项目/Item		规格/Specification						判定标准/Judgment	
6-1	寿命 Life							试验后,马达应符合项 7-1 的要求。 After the test, motors shall be approved as specified in item 7-1.	
		位置 Position	电压 Volt	负荷 Load	温度 Temp	湿度 Humi	寿命 Life		
		轴水平 Horizon	Rated 额定	Weight 振子	20°C	65%	200,000 Cycles		
6-2	低温放置 Low temp exposure	温度 /Temperature: -40±2℃ 时间 /Time: 96h						在常温常湿下放置 2h 后, 马达应符合项 7-2 的要求。 After 2 hours exposure in ordinary temperature and humidity, Motors shall be approved as specified in item 7-2.	
6-3	高温放置 High temp. Exposure	温度 /Temperature: 80±2℃ 时间 /Time: 96h							
6-4	湿度放置 Humidity exposure	温度 /Temperature: 40±2℃ 湿度 /Humidity: 90~95%RH 放置时间 / Exposure time: 96h 无水气凝结/No condensation of moisture							
6-5	振动 Vibration	全振幅 /Displacement : 1.5mm (p-p) 频率 /Frequency: 10 ~ 55Hz 加速度 /Acceleration: 22m/s² 周期 /Period: 20min 完成 10~55~10Hz /20 Minutes log sweep10~55~10Hz 方向 /Direction: x, y, z 时间 /Time: 每个方向 2h /Each 2 hours						测试结果应符合项 7-2 的要求。 After the test motors shall be approved as specified in item 7-2.	
6-6	自然跌落 Free fall	试验状态/Test state:将马达固定在约 100 克（包括马达本身）的物体上，落向水泥地面。 Set the motor to the approximately 100g (include the motor) weight of block drop the motor on the concrete floor. 高度 /Height: 1.5m 方向 /Direction: 6 个面 / 6 faces 次数 /Number of times: 每个面 2 次 / Twice 2 each						测试结果应符合项 7-2 的要求。 After the test motors shall be approved as specified in item 7-2.	

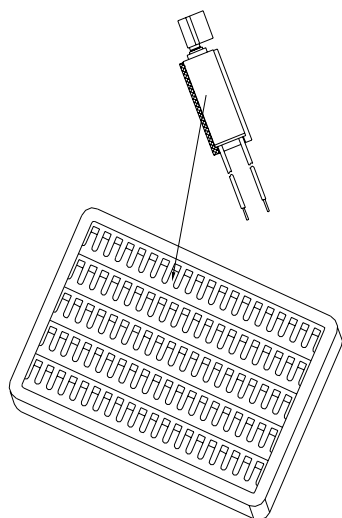
6-7	热冲击 Heat shock test	70±2℃ -30±2℃ 试验循环 /Test cycle :20 cycles	在常温常湿下放置 2h 后，马达应符合项 7-2 的要求。 After 2 hours exposure in ordinary temperature and humidity, Motors shall be approved as specified in item 7-2.
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7. 要求/Requirements

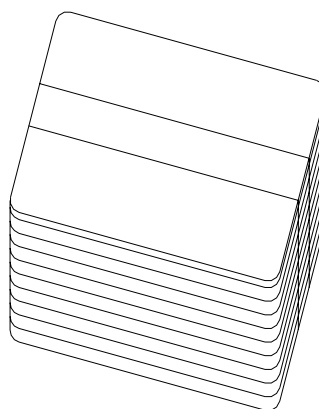
项目/Item		判定基准 / Requirements	
7-1	表 A Table A	1)额定转速/Rated speed 2)额定电流/Rated current 3)起动电压/Starting voltage	:不低于初始值-30%; 不高于初始值+60% data-30% Initial Min data+60% Initial Max :不大于初始值±30%/Initial data±30% max :不大于 2.4V 直流电压 2.4V DC Max
7-2	表 B Table B	1)额定转速/Rated speed 2)额定电流/Rated current 3)起动电压/Starting voltage	: 不大于初始值±30%/Initial data±30% Max :不大于初始值±30%/Initial data±30% Max :不大于 2.4V 直流电压 2.4V DC Max

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8.使用时注意事项/Matters to be paid attention to when using motor				
8-1 电机在运输过程中应小心轻放，避免严重碰撞敲击引起的电机机身和性能受损。 (Please lay the motors carefully in transportation to avoid any serious damage to the motor body or its electric function because of collision.) 8-2 必须按照规格书的标准使用，否则会影响电机寿命。 (Please use the motor according to the instruction of this product specification, or else, it will be bad for motor's life.) 8-3 请在 6 个月内使用，请不要在高温、低温、高湿环境下存储。在使用和打开马达外包装时请避免水气凝结。 (Make arrangement to limit the storage period to 6 months or less. Please do not store motor in high temperature. Low temperature. high humidity environment. Condensation of atmosphere must be avoided in motor usage or opening the packaging of the motor.) 8-4 马达应适当的操作、储存和运转环境中均不可存在腐蚀性气体。例如：H₂S、SO₂、NO₂、CL₂ 等。另外存储环境中不可有诸如硅、氰、甲醛水和苯酚等能放射出腐蚀性气体的物质，在电机的机械构造或装置中，如果存在腐蚀性气体，那么这会引起马达不运转。 (For proper operation. storage and operating environment must not contain corrosive gases. For example H₂S. SO₂. NO₂. CL₂. etc. In addition storage environment must not have materials that emit corrosive gases especially from silicon. cyanic. formalin and phenol group. In the mechanism or the set. existence of corrosive gases may cause no rotation in motor.) 8-5 请通电后不要长时间堵住机轴，并且马达转动时不要触碰振子。 (Please don't stall the shaft for a long time after powering, and not to touch the weight when motor is rotating.) 8-6 马达轴向间隙处不应有杂物（如颗粒、纤维物、头发、胶带、胶水等） (There should be no sundries (such as grain, fibre, hair, small tape, glue etc.) in the shaft end play.)				

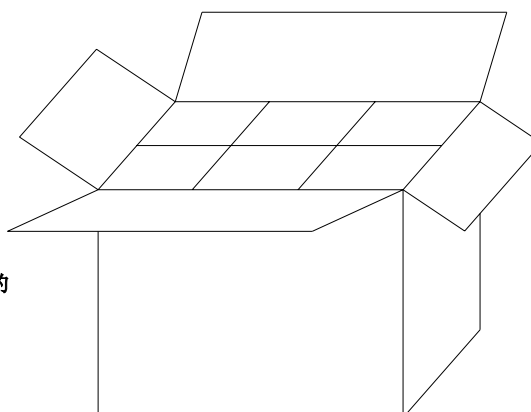
Z4KL 马达包装



100PCS(1 tray) × 10



1000PCS(1 bundle) × 6



包装试验要求

1. 标准

- (1) 整箱重量小于等于9kg的, 跌落高度设定为75cm.
- (2) 整箱重量大于9kg但小于等于23kg的, 跌落高度设定为60cm.

2. 试验方法:

跌落要求为六面三棱一角.

- (1) 六面: 先从最大两面跌, 然后是中间大小的两面, 最后跌最小的两面, 一共六次.
- (2) 三棱: 指任选三条同一角的棱, 跌落秩序: 最长棱, 中间长度, 最短的, 一共三次.
- (3) 一角: 指上一步三条棱所组成的角, 跌落一次.

3. 判定基准

经过跌落试验后, 产品外观、性能无不良.

Package Test Requirement:

1. Criteria

- (1) The weight of the whole carton less than 9kg, the dropping height is 75cm.
- (2) The weight of the whole carton more than 9kg and less than 23kg, the dropping height is 60cm.

2. Test Methods:

Dropping requirement is 6 faces, 3 arris, 1 angle.

- (1) 6 faces: First dropping with two biggest faces, then dropping with another two middle faces, at last dropping with two smallest faces, once per face, total 6 faces.
- (2) 3 arris: Choose any 3 arris which make up of the same the angle, the dropping sequence is the longest arris, middle arris, shortest arris. Total 3 times.
- (3) 1 angle: Point to the angle which is made up with the 3 arris in the above step. Dropping for 1 time.

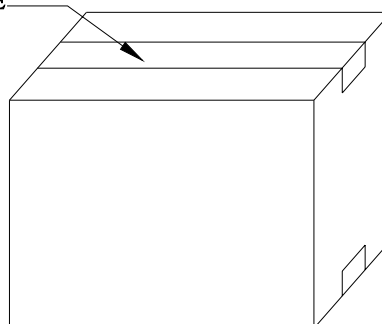
3. Judgement Criterion

After drop test, no evidence of damage on the appearance and performance.

Remarks:

1000PCS/CTN: 23.5cm × 17cm × 27cm
 2000PCS/CTN: 33.5cm × 23.5cm × 27cm
 4000PCS/CTN: 46.5cm × 33.5cm × 27cm
 6000PCS/CTN: 50.5cm × 46.5cm × 27cm

OPP TAPE

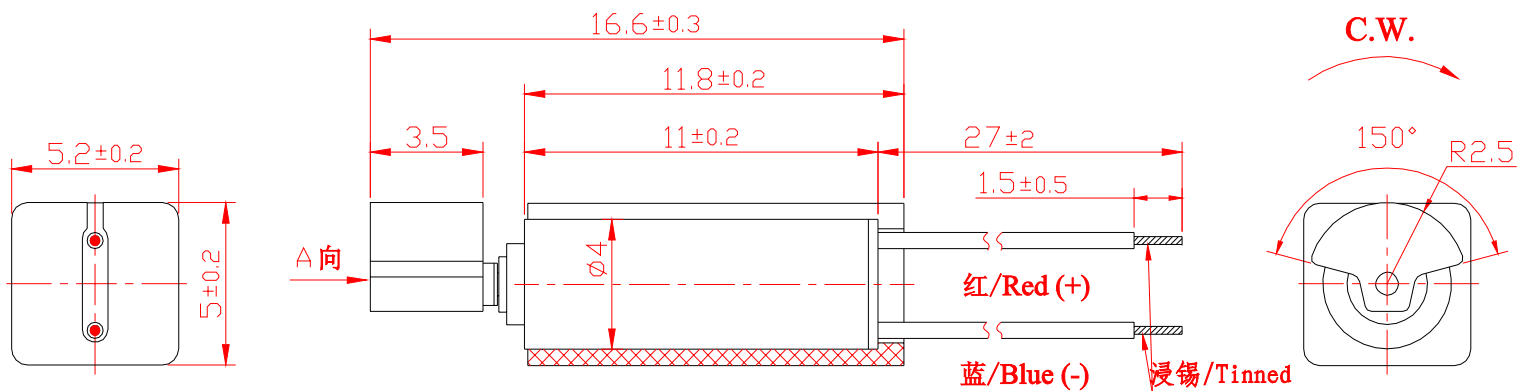


金龙机电股份有限公司
技术开发部

Z4KL2B0030471

技术要求/Technic requirement

- 1.额定电压/Rated voltage:3.0V
- 2.额定电流/Rated current:70mA Max
- 3.额定转速/Rated speed:10500 ± 2500rpm
- 4.堵转电流/Stall current:90mA Max
- 5.端子阻抗/Terminal resistance:41Ω(± 20%)
- 6.起动电压/Starting voltage:1.7V Max
- 7.轴向间隙/Shaft end play:0.05~0.2mm
- 8.导线规格/Lead spec: AWG32 UL3302
- 9.所有尺寸为A向压紧后的尺寸(不包括轴向间隙)/Overall length is measured after counterweight being pressed against body in direction A. (Shaft end play is not included.)
- 10.未注线性公差为/Unmarked tolerance: ± 0.1mm



借(通)用件登记

底图总号

签 字

日 期

标 记	处 数	分 区	更改文件号	签 名	日 期
设 计	杨 兰	2005.9.22	标准化	吴云明	2005.9.22
校 对	张爱平	2005.9.22			
审 核	龚 锐	2005.9.22			
工 艺	章启策	2005.9.22	批 准	郑向超	2005.9.22

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金龙机电股份有限公司

外形图

Z4KL2B0030471

阶段标记 重量 比例

5:1

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说明书/Specification

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代码/code:0

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