



立得微电子（惠州）有限公司
Leader Micro Electronics (huizhou) Co., Ltd

产品规格书

PRODUCT SPECIFICATION

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|--------|----------------------------------------|--------------------------------|---------------------|
| 客户 | 客户名称/Customer | | |
| | 客户料号/Part No. | | |
| | 客户承认签章 Customer Approved Signatures | | |
| 敝 司 | 文件编号/Spec No. | LEADER-Z-0408464920-B1 | |
| | 品名 Description | 圆柱直流马达 Cylindrical DC Motor | |
| | 型号/Model | LCM0408464920-B1 | |
| | 送样日期/Date | | |
| | 作成/Designed | 检讨/checked | 承认/Approved |
| | 张亭亭 2022. 11. 17 | 张冠军 2022. 11. 17 | 王远东 2022. 11. 17 |

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1. 适用范围/Scope of application

This product manual applies to the LCM0408 standard vibration motor .
本产品说明书适用于 LCM0408 标准振动马达。

2. 使用条件/Standard operating condition

| No. 序号 | Items 项目 | Specification 规格 |
|-----------|---------------------------------------|---------------------------------------------------------------------------------------------|
| 2-1 | Rated voltage 额定电压 | 3.0V DC |
| 2-2 | RATED LOAD / 额定负荷 | Counterweight (according to specification of motor housing configuration) / 摆轮 (按电机外型结构图规定) |
| 2-3 | Rotating direction 回转方向 | CW / CCW all directions 顺, 逆时针方向皆可 |
| 2-4 | Motor posture 摆放位置 | Any posture is available 任何位置都可以 |
| 2-5 | Voltage range for use 使用电压范围 | 2.6V-3.2V DC |
| 2-6 | Allowable temperature range 可用温度范围 | 1) 工作温度/Working temperature: -20°C~60°C 2) 储藏温度/Storage temperature: -20°C~70°C |
| 2-7 | Appearance 外观 | Should be free of crack, rust, stain and dents. 外观上没有刮伤, 生锈及凹痕等不良现象 |



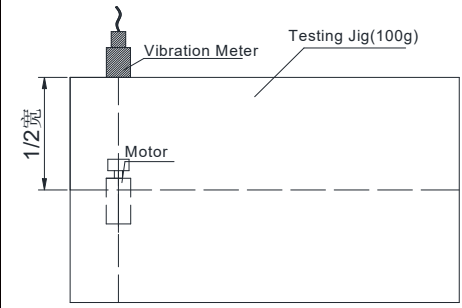
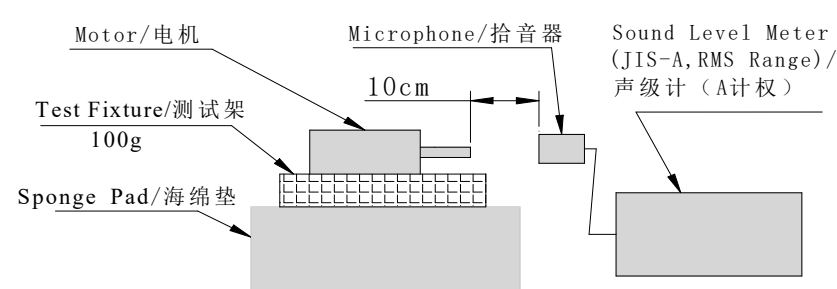
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3. 测试条件/Test Conditions

| No. 序号 | Items 项目 | Measuring condition 测试条件 | Specification 规格 |
|-----------|--------------------------------|---------------------------------------------------------------------------|---------------------|
| 3-1 | Rated load 额定电流 | Measure at rated voltage 在额定电压下测定 | 85mA max |
| 3-2 | Rated speed 额定转速 | Measure at rated voltage 在额定电压下测 | 14000±3000rpm |
| 3-3 | Holding current 堵转电流 | Measure current at locked weight in rated voltage 在额定电压及锁定电机转子条件下测试 | 110max |
| 3-4 | Starting voltage 起动电压 | Minimum voltage for starting (On / Off Test) 起动的最小电压条件作通断测试 | 2.0V DC max |
| 3-5 | Terminal resistance 电枢电阻 | Measure between terminals 在端子间测试 | 40±15%Ω |
| 3-6 | Shaft and play/ 轴间隙 | 轴沿着轴向可以移动的距离/ distance of axial play on shaft | 0.05~0.3mm |
| 3-7 | Measuring condition 测试条件 | Temperature/温度: 25±2℃ Relative humidity/相对湿度: 60±7%RH | |

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4.机械特性/Mechanical characteristics

| No. 序号 | Items 项目 | Measuring condition 测试条件 | Specification 规格 |
|--------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------|------------------|
| 4-1 | Insulation resistance 绝缘电压 | Supply with DC 100V between the lead wire (shrapnel or PIN) and the vibration weight 在导线 (弹片或者 PIN) 与振动子之间提供 DC 100V 电压 | 10MΩ MIN |
| 4-2 | Vibration Test 振动测定 |  | Grms 0.6 Min |
| 4-3 | Mechanical Noise 机械噪音 | At rated voltage and rated load back ground noise: 30dB(A) max. 额定电压及负荷下测试背景噪音不超过30分贝 | 50dB(A) MAX |
| 4-3 | |  | |



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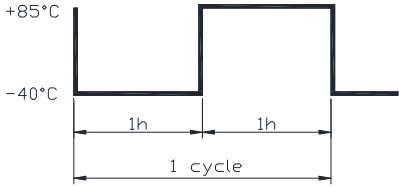
5.判定基准/Requirements

| NO./序号 | Item/项目 | Requirements/判定基准 |
|--------|---------|------------------------------------------------------------------------------------------------------------------------------------|
| 5-1 | TABLE A | Rated speed/额定转速: Initial data/初始值±50%Max Rated current/额定电流: Initial data/初始值±50%Max Starting voltage/起动电压: 2.0V DC Max |
| 5-2 | TABLE B | 1)Rated speed/额定转速: Initial data/初始值±30%Max 2)Rated current/额定电流: Initial data/初始值±30%Max Starting voltage/起动电压: 2.0V DC Max |
| 5-3 | TABLE C | 1)Rated speed/额定转速: Initial data/初始值±35%Max 2)Rated current/额定电流: Initial data/初始值±35%Max Starting voltage/起动电压: 2.0V DC Max |

6.信赖性测试/Reliability test

| | | | |
|-----|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| 6-1 | Life 寿命 | Voltage/电压: 3.0V DC Load/负荷: Counterweight(摆轮重) Temperature/温度: 25°C±2°C Humidity/湿度: 65±2%RH Test form/试验形式: 1S(C.W.)ON 1S OFF Test time/试验时间: 130,000cycles | After the test ,motors shall be approved as specified in item 5-1试验后, 马达能满足5-1的规定 |
|-----|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|

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| NO./序号 | Item/项目 | Test condition/试验件 | Requirements/判定基准 |
|--------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| 6-2 | Vibration test 振动试验 | 1. Displacement/全振幅: 1.5mm(p-p) 2. Frequency/频率: 10~55Hz 3. Period/周期: 1min 范围内 (10~55~10Hz) 4. Direction/方向: x、y、z 5. Time/时间: 10分钟 | After the test, motors shall be approved as specified in item 5-1 试验终止后, 马达能满足5-1项的判定基准 |
| 6-3 | Low temp exposure 低温放置 | Temperature/温度: $-40 \pm 2^{\circ}\text{C}$ Time/时间: 96hours | After 2 hours exposure in ordinary temperature and humidity, motors shall be approved as specified in item 5-2 常温常湿条件下放置2小时后, 马达满足5-2的规定 |
| 6-4 | High temp exposure 高温放置 | Temperature/温度: $80 \pm 2^{\circ}\text{C}$ Time/时间: 96hours | |
| 6-5 | Humidity exposure 湿度放置 | Temperature/温度: $60 \pm 2^{\circ}\text{C}$ Humidity/湿度: $90 \pm 5\% \text{Rh}$ Time/时间: 96hours | |
| 6-6 | Thermal shock 热冲击 | <div style="text-align: center;">  <p>Test cycle/试验循环周期数: 15cycles</p> </div> | After 2 hours exposure in ordinary temperature and humidity, motors shall be approved as specified in item 5-3 常温常湿条件下放置2小时后, 马达满足5-3的规定 |
| 6-7 | Free fall 自由跌落 | Set the motor to the approximately 100g(include the motor) weight of block Drop the motor on the concrete floor 将马达放在一个重100g的盒子里跌落至混凝土地面上 Height/高度: 1.5m Direction/方向: $\pm X, \pm Y, \pm Z$ Number of times /次数: 每一平面下落 3次, 共 18次。 | After the test, motors shall be approved as specified in item 5-1 试验终止后, 马达能满足5-1项的判定基准 |



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7. Cautions/注意事项

(1) Allowable range for use/工作范围

Unless it is used in accordance with the specifications, the performance and life may be considerably reduced. Due attention should be paid to the voltage and current ranges for use.

注意电压及电流的使用范围,如果没有根据本标准使用的话,将会降低马达的寿命和性能

(2) Storage/储存

Avoid storing in high temperature, high humidity or corrosive gas environment.

避免储存在高温高湿或者腐蚀性气体的环境当中

(3) Handling of motor/使用马达

- To handle the motor, hold the motor case softly.

拿取马达时,要轻轻拿取机壳部位

- Do not bring a magnetized object near or into contact with the surface because there is a fear of performance being deteriorated.

避免放置在磁性物体附近或接触其表面,这将影响其功效

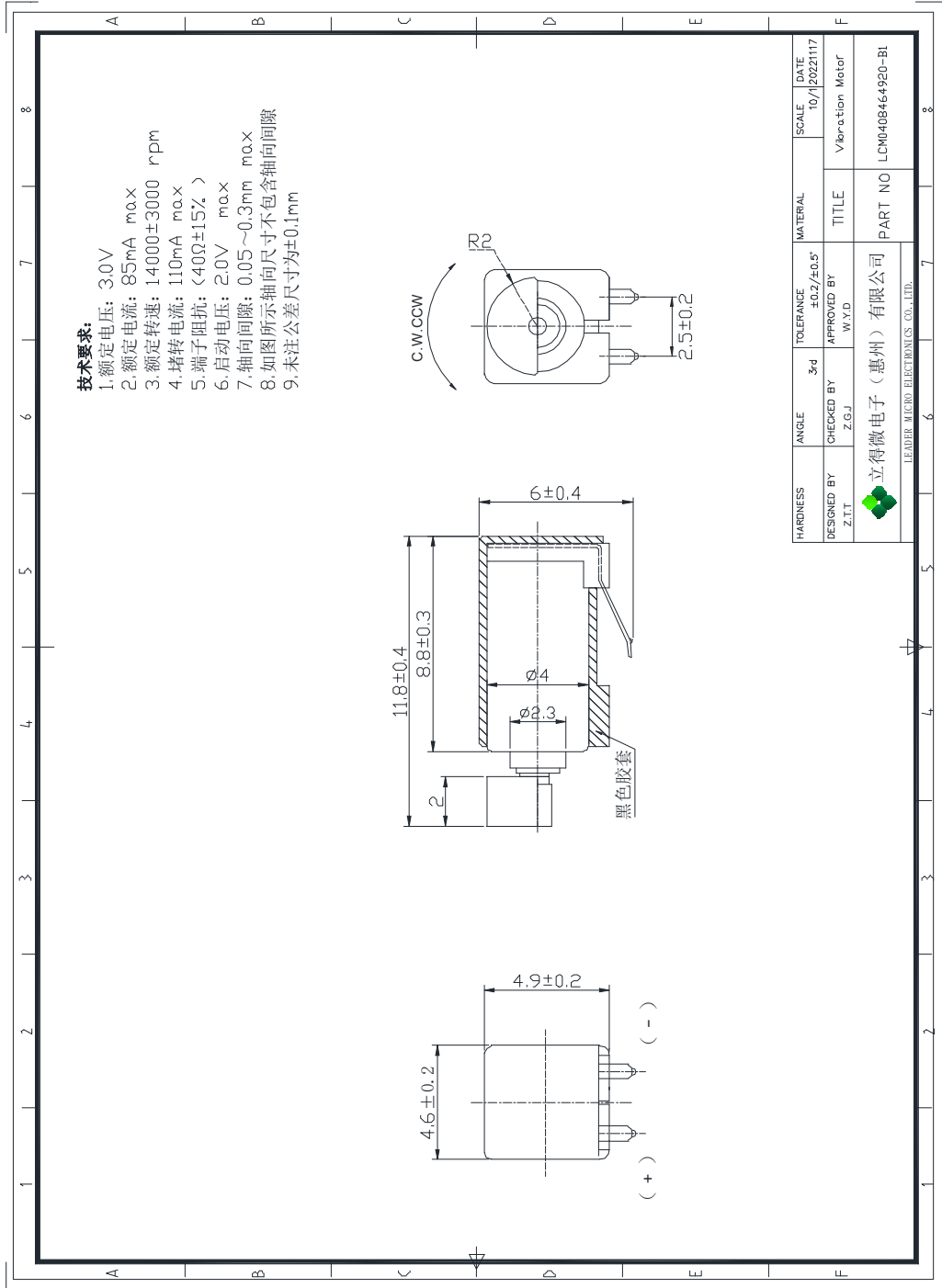
- Due attention must be paid to the handling and working environments because such

objects as iron powder if attracted by the motor magnet, will cause noise, characteristic deterioration, thus reducing the reliability.

注意操作环境,尤其注意若铁粉被磁铁吸附,将出现噪音问题,降低使用寿命

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8. 机械图/Mechanical drawing



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9.包装规范/Packing Specification

9-1 每个塑料盒里放 50 个马达。
50 motors in each tray

9-2 每 15 个塑料盒上盖一个塑料盖板，用胶带捆成一捆。
Put a plastic cover on every 15 plastic boxes and tie them with tape to make a bundle.

9-3 捆好后装入塑料袋内用胶带绑好。
Tie it up and put it in a plastic bag and tie it up with tape

9-4 每8袋包装盒按图中的叠放方式放入一个外包装箱。
Place each 8 bags into one outer box as stacked in the picture.

