

# 技术规格书

## SPECIFICATION FOR APPROVAL

客户品名:

Product Name Of Customer: \_\_\_\_\_

客户部品编号:

Part Number Of Customer: \_\_\_\_\_

我方品名(材料):

Product Name Of Ours: CK48315-2020-A25 振动电机

### 内 容

#### CONTENT

- |            |                                 |
|------------|---------------------------------|
| (1) 结构形式   | CONSTRUCTION-FORM               |
| (2) 标准运行条件 | STANDAND OPERATING CONDITION    |
| (3) 电气性能   | ELECTRICAL CHARACTERISTICS      |
| (4) 机械要求   | MECHANICAL SPECIFICATION        |
| (5) 性能特征   | PERFORMANCE AND CHARACTERISTICS |
| (6) 型式试验   | RELIABILITY TEST                |
| (7) 注意事项   | CAUTIONS                        |
| (8) 包装要求   | PACKAGE REQUIRE                 |
| (9) 外形图    | DRAWING                         |

客户名称:

CUSTOMER:

确 认:

APPROVED:

拟 制

DRAWN

审 核

CHECK

批 准

APPROVED

SPECIFICATION

技术指标书

VIBRTION MOTOR	MODEL: 型号	PAG: 第 1 页共 9 页
振动马达	CK483P15-2020-A25	

2- CONSTRUCTION-FORM

结构形式

NO 序号	ITEM 项目	CONTENTS 内容
1-1	MOTOR CONSTRUCTION 马达结构	4mm CYLINDRICAL DC CORELESS MOTOR 直径为 4mm 的空心杯振动马达
1-2	NUMBER OF PHASES 相数	3-PHASES (-CONNECTION) 3 相
1-3	NUMBER OF MAGNET POLES 磁极极数	2-POLES (INNER MAGNET TYPE) 两极(磁钢内置)
1-4	COIL CONSTRUCTION 线圈结构	CYLINDRICAL MOVING COIL 圆柱型线圈
1-5	RECTIFYING METHOD 换向方式	PRECIOUS BRUSH AND COMMUTATOR 电刷换向器装置

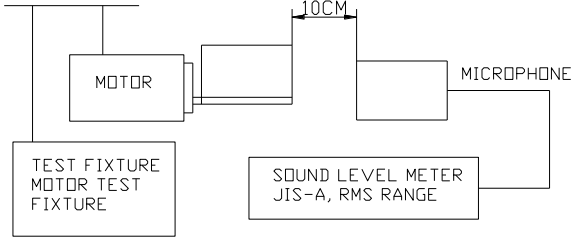
2. STANDAND OPERATING CONDITION

标准运行条件

NO 序号	ITEM 项目	SPECIFICATION 规格
2-1	RATED VOLTAGE 额定电压	DC3.0V
2-2	RATED LOAD 额定负荷	VIBRATION WEIGHT (AS OUTLINE DRAWING) 偏心锤(尺寸参考相关图纸)
2-3	ROTATION DIRECTION 回转方向	CW(CLOCKWISE)-FORM THE COUNTER WEIGHT 顺时针方向(从振子端看)
2-4	MOTOR POSITION 摆放位置	ANY POSTION AVAILABLE 任何位置都可以
2-5	VOLTAGE RANGE FOR USE 工作电压范围	DC2.0V~3.6V
2-6	ALLOWABLE TEMPERATURE RANGE 允 许温度范围	WORKING TEMPERATURE: -20°C~60°C 工作温度: -20°C~60°C
2-7	STORAGE TEMPERATURE 存储温度	-20°C~70°C

SPECIFICATION		技术指标书	
VIBRTION MOTOR	MODEL: 型号	PAG: 第 2 页共 9 页	
振动马达	CK483P15-2020-A25		
3. ELECTRICAL CHARACTERISTICS			
电气性能			
NO 序号	ITEM 项目	MEASURING CONDITION 测试条件	SPECIFICATION 规格
3-1	RATED SPEED 额定转速	AT RATED VOLTAGE AND RATED LOAD 额定电压及负荷下测试	15000±2500rpm/min
3-2	RATED CURRENT 额定电流	AT RATED VOLTAGE AND RATED LOAD 额定电压及负荷下测试	100MA MAX
3-3	STALL CURRENT 堵转电流	AT RATED VOLTAGE AND SHAFT LOCK 额定电压及锁定电机轴条件下测试	120MA MAX
3-4	STARTING VOLTAGE 起动电压	AT RATED LOAD AND STEP VOLTAGE 额定负载及电压直投法条件下测试	DC2.0V MAX
3-5	VIBRATION SWING 振动量	<p>FIX THE MOTOR ON THE EDGE OF AN IRON CUBE WHICH IS <math>\Phi 50 \times 5\text{MM}</math>, SUSPEND THE VIBRATION WEIGHT, SECURE THE PROBE OF THE VIBRATION TESTER ONTO THE SYMMETRICAL POINT AS THE VIBRATOR ON THE CYLINDER (SEE SKETCH), SUPPLY THE MOTOR WITH RATED VOLTAGE, THE VIBRATION TESTETR WILL GET THE VIBRATION SWING VALUE.</p> <p>电机固定在 <math>\Phi 50 \times 5\text{mm}</math> 铁质圆柱体边缘, 振动锤悬空, 将振动仪探头固定在电机对称圆柱体边缘位置, 电机接通额定电压, 直接用振动仪测试电机振动量。</p> 	$\geq 1.0G$
3-6	TERMINAL RESISTANCE 电枢电阻	MEASURE BETWEEN TERMINALS 端子阻抗	$(29 \pm 3) \Omega$
3-7	INSULATION RESISTANCE 绝缘电阻	DC 100V BETWEEN LEAD WIRE AND CASE 在导线与电机本身之绝缘电阻	10M $\Omega$ MIN
SPECIFICATION		技术指标书	

VIBRTION MOTOR	MODEL: 型号	PAG: 第 3 页共 9 页
振动马达	CK483P15-2020-A25	

NO 序号	ITEM 项目	MEASURING CONDITION 测试条件	SPECIFICATION 规格
3-8	INSULATION VOLTAGE 绝缘电压	DC100V BETWEEN LEAD WIRE AND MOTOR CASE DURING ONE MINUTE 在导线与马达机身之间提供 DC100V 电压一分钟	1MA MAX CUT OFF CURRENT
3-9	MECHANICAL NOISE 机械噪音	AT RATED VOLTAGE AND RATED LOAD BACK GROUD 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
			

ADD: MEASURING CONDITION: 测试条件

1. MEASURING TEMPERATURE: (20±2) ° C

2. MEASURING RELATIVE HUMIDITY: 63%-67%; 测试相对温度: 63%-67%。

#### 4. MECHANICAL SPECIFICATION

##### 机械要求

NO 序号	ITEM 项目	MEASURING CONDITION 测试条件	SPECIFICATION 规格
4-1	CONFIGURATION 外观尺寸	VERNER CALIPERS 游标卡尺	AS SPECIFIDE IN OUTLINE DRAWING 参考相关图纸
4-2	APPEARANCE 外观	VISUAL EXAMINATION 目测	SHOULD BE NO EVIDENCE OF MECHANICAL DAMAGE、CRACK、 RUST AND STAIN 不得有明显的机械划痕、裂缝、锈迹、污 点
4-3	WEIGHT 重量	BALANCE 天平	1.3g (APPROX) 1.3 克 (左右)
4-4	SHAFT END PLAY 轴向间隙	DISTANCE OF AXIAL PLAY ON SHAFT 轴向间隙	(0.05-0.2) mm

SPECIFICATION	技术指标书
---------------	-------

VIBRTION MOTOR	MODEL: 型号	PAG: 第 4 页共 9 页
振动马达	CK483P15-2020-A25	

NO 序号	ITEM 项目	MEASURING CONDITION 测试条件	SPECIFICATION 规格
4-5	SHAFT PULL TEST 振子拉脱力试验	COUNTER WEIGHT MUST WITHSTAND AN AXIAL PULL SLOWLY INCREASE PULL FORCE UNTIL DESTRUCTI- ON. RECORD THE FORCE WHEN DESTRUCTION OC- CURS. 固定电机, 平行于轴方向缓慢加力拉振子, 直到振子拉脱记录下拉脱时的力	PULL FORCE $\geq$ 30N 拉脱力 $\geq$ 30N

5. Performance and characteristics

性能特征

SHOULD BE SATISFIED WITH THE REQUIREMENTS OF TABLE 1 AFTER RELIABILITY TEST.

通过以下型式试验后应满足表 1 的规格要求。

表 1: 评估表

NO 序号	ITEM 项目	SPECIFICATION 规格
5-1	RATED CURRENT 额定电流	INITIAL DATA: $\pm$ 30% MAX 最大不超过初始值的 $\pm$ 30% MAX
5-2	RATED SPEED 额定转速	INITIAL DATA: $\pm$ 30% MAX 最大不超过初始值的 $\pm$ 30% MAX
5-3	STSRTING VOLTAGE 起动电压	2.0V DC MAX 最大不超过 2.0V DC
5-4	OTHERS 其它	1) SHOULD NOT FAIL IN STARTING 2) SHOULD NOT BE UNUSUAL MECHANICAL NOISE 1) 正常启动 2) 无异常噪音

SPECIFICATION	技术指标书
---------------	-------

VIBRTION MOTOR	MODEL: 型号	PAG: 第 5 页共 9 页
振动马达	CK483P15-2020-A25	

6. Reliability test

型式试验

NO 序号	ITEM 项目	CONTENTS 内容
6-1	LIFE TEST 寿命测试	<p>1) VOLTAGE: DC 3.0V 测试电压: DC 3.0V            2) LOAD: COUNTER WEIGHT 负荷: 偏心锤            3) TEMPERATURE: (20±2) °C 温度: (20±2) °C            4) RELATIVE HUMIDITY: 60%~70% 相对湿度: 60%~70%</p> <p>TESTING METHOD: AFTER 250,000 CYCLE OF A 0.5 SECONDS ON FOLLOWED BY 0.5 SECONDS OFF DUTY, THE CHANGE OF THE CURRENT VALUE IS NO GREATER THAN ±30% OF THE INTIAL CURRENT.            测试方式: 运转 0.5 秒、停 0.5 秒, 反复循环 25 万次, 转速、电流变化量不超过初始值的±30%。</p>
6-2	HIGH TEMPERATURE EXPOSURE 高温放置	<p>EXPOSURE TO (85±2) °C FOR 96 HOURS, THEN RETURN TO ORDINARY TEMPERATURE AND HUMIDITY FOR 2 HOURS.            在温度 (85±2) °C 条件下放置 96 小时后, 在正常温度和湿度下放置 2 小时。</p>
6-3	LOW TEMPERATURE EXPOSURE 低温放置	<p>EXPOSURE TO -40°C FOR 96 HOURS, THEN RETURN TO ORDINARY TEMPERATURE AND HUMIDITY FOR 2 HOURS.            在温度-40°C 条件下放置 96 小时后, 在正常温度和湿度下放置 2 小时。</p>
6-4	HUMIDITY TEST 湿度测试	<p>EXPOSURE TO (60±2)°C, 85%~95%RH (RELATIVE HUMIDITY) FOR 96 HOURS, THEN RETURN TO ORDINARY TEMPERATURE AND HUMIDITY FOR 2 HOURS.            在温度 (60±2) °C, RH85%~95% (相对湿度) 条件下放置 96 小时后, 在正常温度和湿度下放置 2 小时。</p>
6-5	HEAT CYCLE TEST 热循环测试	<p>EXPOSURE TO HEAT TEST CONDITION UNDERLINE FOR 5 TIMES, THEN RETURN TO ORDINARY TEMPERATURE AND HUMIDITY FOR 2 HOURS.            在下列测试条件下循环 5 次后, 在正常温度和湿度下放置 2 小时。</p> <p>-40°C ± 2°C</p> <p>85°C ± 2°C</p> <p>0 1h 1h 1h 1h</p>
6-6	VIBRATION TEST 振动测试	<p>VIBRA WITH 1.5MM, 10HZ-55HZ-10HZ PER MINUTE, X-Y-Z EACH DIRECTION FOR 30 MINUTES AT STANDARD PACKING CONDITION.            正常包装情况下, 每分钟 10HZ-55HZ-10HZ 循环、振幅 1.5mm 条件下沿 XYZ 三个方向各振动 30 分钟。</p>

VIBRTION MOTOR	MODEL: 型号	PAG: 第 6 页共 9 页
振动马达	CK483P15-2020-A25	

NO 序号	ITEM 项目	CONTENTS 内容
6-7	DROP TEST 落地测试	SET THE MOTOR TO THE APPROXIMATELY 100g (INCLUDING THE MOTOR) WEIGHT OF BLOCK, X-Y-Z FREE DROPFVDM THE HEIGHT OP 1.5M DIRECTION 3 TIME ON THE CONCRETE FLOOR. 马达连正常包装约 100g, 从 1.5 米的高度自由落体至水泥地面, X-Y-Z 三个方面各 3 次。
6-8	LAS VEGAS EFFECTt 拉斯维加斯效应	THIS TEST SUBJECTS THE MOTOR TO A HIGH TEMPERATURE, LOW HUMIDITY ENVIROMENT WHILE BEING OPERATIONAL. TEMPERATURE SET AT 60°C, WITH <RH20% RELATIVE HUMIDITY FOR 48 HOURS. MOTOR TO BE OPERATIONAL DURING THIS EXPOSURE USING A 8SECONDS ON FOLLOWED BY 52 SECONDS OFF DUTY CYCLE. 温度 60°C, 相对湿度<RH20%, 运转 8s、停 52s 运行 48h 应满足 5-2 项要求。
6-9	SALT SPRAY TEST 盐雾测试	EXPOSURE THE MOTOR TO AN ENVIROMENT WITH 35°C, 5%NaCl RESO- LUTION SPRAY FOG FOR 48 HOURS, VISUAL EXAMINTION IDENTIFY NO SIGNS OF CORROSION. 将马达放置于 35°C, 5%NaCl 中性溶液盐雾中 48 小时目测应无腐蚀现象发生。

#### 7. CAUTIONS

##### 注意事项

##### 1) ALLOWABLE RANGE FOR USE

PAY ATTENTION TO VOLTAGE AND CURRENT RANGES FOR USE , AND USE THE VIBRATION MOTOR IN THE CONDITION ACCORDANCE WITH THIS SPECIFICATIONS , OR THE LIFE AND PERFROMANCE SHOULD BE CONSIDERABLY REDRCED.

##### 工作范围

注意电压及电流的使用范围, 并且在本标准规定情况下使用马达, 否则将相应降低马达的使用寿命和性能。

SPECIFICATION	技术指标书
---------------	-------

VIBRTION MOTOR	MODEL: 型号	PAG: 第 7 页共 9 页
振动马达	CK483P15-2020-A25	

2) STORAGE  
STORAGE TEMPERATURE: -20°C~70°C  
STORAGE RALATIVE HUMIDITY: ≤75%  
AVOIDS STORING IN HIGH TEMPERATURE、HIGHHUMIDITY OR CORROSIVE GAS ENVIRONMENT

储存  
储存温度: -20°C~70°C  
储存湿度: ≤75%  
避免放置在高温、潮湿及有腐蚀性气体的环境中。

3) HANDLING OF MOTOR  
-TO HANDLE AND HOLD THE VIBRATION MOTOR CASE SOFTLY.  
-DO NOT BRING MAGNETIZED OBJECT NEAR OR CONTACT WITH THE SURFACE OF MOTOR TO AVOID OF PERFORMANCE BEING DETERIORATED.

-PAY ATTENTION TO THE HANDLING AND WORKING ENVIROMENTS OF MOTOR, BECAUSE SUCH OBJECTS AS IRON POWDER IF ATTRACTED BY MOTOR MAGNET, WILL CAUSE NOISE CHARACTERISTIC DETERIORATION , THUS REDUCING THE RELIABILITY.

使用马达  
-小心拿取、使用。  
-避免放置在磁性物体附近或接触其表面, 这将影响其功效。  
-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。

SPECIFICATION	技术指标书
---------------	-------



**8. PACKAGE REQUIRE/包装要求**

## CONTENT AND PROCESS/工作内容和程序

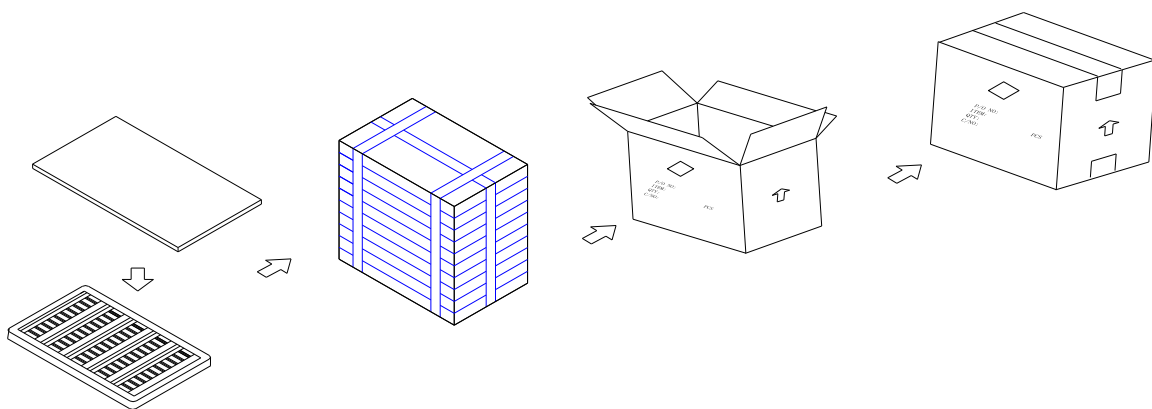
1.100 VIBRATORS IN EACH FOAM BOX./每个泡沫盒里放 100 个马达。

2.EVERY 10 CAPSULES AS A GROUP, PUT A FOAM COVER ON THE GROUP AND WRAP IT IN TAPE./  
每 10 个泡沫盒上盖一个泡沫盖板，用胶带捆做一捆。

3.PUT THE WRAPPED GROUP INTO A PLASTIC BAG AND WRAP THE BAG./捆好后装入塑料袋内用胶  
带绑好。

4.EVERY 1 BAGS ARE PUT INTO AN OUTER CASE WITH A SIZE OF 310×238×230 BY THE WAYS  
STIPULATED AS THE DRAWING./每 1 袋泡沫盒按图中的叠放方式放入一个外包装箱  
( 310×238×230 )。

5.QUANTITY AND BATCH NUMBER ARE WRITTEN ON THE SURFACE OF THE OUTER CASE./数量、  
生产批号均写在外包装箱上。

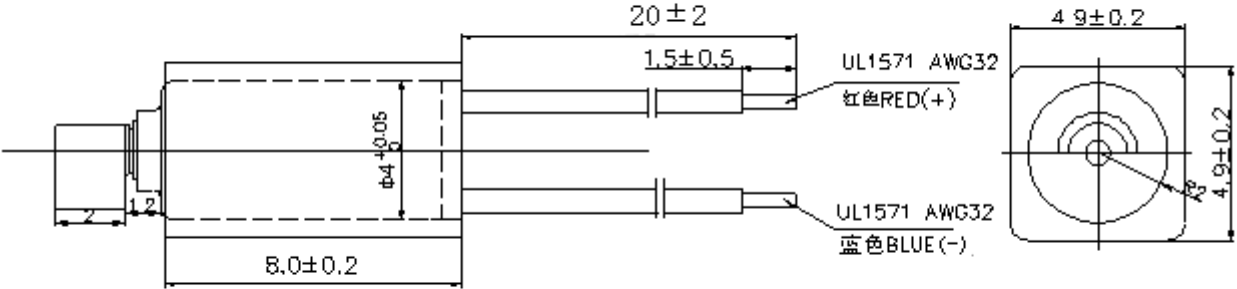


注：每盒 100 只电机。  
每叠 10 盒。

每箱 4 叠。  
共 4000 只/箱。  
泡沫盒包装。

SPECIFICATION		技术指标书	
VIBRTION MOTOR	MODEL: 型号		PAG: 第 9 页共 9 页
振动马达	CK483P15-2020-A25		

9.MECHANICAL DRAWING/机械图



Unit:mm      单位:mm

Figure 1 Motor Housing Configuration  
图 1 电机外形结构图