



产品规格书

PRODUCT SPECIFICATION

客户名称Buyer Name	
客户料号Buyer Part No.	
客户承认签章 Buyers Approval & Signatures	

文件编号Spec No.		版本	A/0
品名描述 Product Description	线性振动马达 LINEAR VIBRATION MOTOR		
型号Part No.	VLV221007C		
送样日期Date			
设计Designed by	审核Checked by	批准Approved by	
陳满	陈满	陈满	
2022.02.16	2022.02.16	2022.02.16	

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重要提示 Important Notes:

1. 如对电机的性能和（或）寿命有任何争议，仅基于此规格书作出判断。

If there is any argument on motor performance and/or life, judgment is to be made base on this specification only.

2. 客户方有责任确认该电机能满足您的使用要求。

Customer has the responsibility to ensure that motor can satisfy the requirement of your application.

3. 如果公司未提供技术规格，该文件将详细叙述与贵公司商定的技术规格。

In the event that an official specification is not present by customer, this document will specify the agreed technical specification.

4. 在满足规格的条件下，我司可以改变零件材料、尺寸及形状来改善品质（或）性能（或）生产效率。

Within the limitation to satisfy this specification, Vybronic has the convenience to change the materials, size and shapes of components of the motor for the purpose of improving quality, and/or performance, and/or production efficiency.

5. 收到此规格书后，贵司应于下订单之前将规格书副本签回以示贵司已确认。如贵司未能在规定时间内签回副本，我司将认为贵司已收到并承认该规格书。

After the receipt of this specification, customer should send a signed copy to Vybronic, before you issued purchase order for the confirmation on acknowledgment. Vybronic, regard it as the receipt of this specification acknowledged if customer fails to return the confirmation to us within the described period.

更改记录 / Revision history

修改号 Rev.No.	日期 Rev. Date	页码 Page No.	修改项目 Revised Item	更改原因 Reason
A/0	2022.02.16	/	初始规格/Preliminary spec	

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1、应用范围 Application

本规格书适用于 VLV221007C 电机。电机类型属于交流型、长方体、直线振动电机。

This specification applies to linear vibration motor model VLV221007C . Motor type is AC type, cuboid shape, linear vibration motor.

客户如果有定制化需求，请提供详细的部件试验规范，双方确认温湿度变化曲线、试验时间、工装夹具、驱动电路。

If customer has customized requirement, please provide detailed component test specification, temperature /humidity changing curve, test time/cycles, fixture and driving circuit.

2、储存和使用环境 Storage, Operating Temperature/Humidity Circumstance

序号 NO.	项目 Items	条件 Condition
2-1	储存环境 Storage temperature range	-40°C ~ 85°C , ordinary humidity Up to 120°C is allowed with reduced performance (No condensation of moisture)
2-2	使用环境 Operating temperature range	-40°C ~ 85°C, ordinary humidity Up to 115°C is allowed with no damaged. (No condensation of moisture)

3、标准测试条件 Standard Test Conditions

序号 NO.	项目 Items	条件 Condition
3-1	温度 Standard test temperature	20±5°C
3-2	湿度 Standard test humidity	65%±20%RH
3-3	测试条件 Test Condition	见图 1 Refer to Figure 1

4、测试方法 Test Method

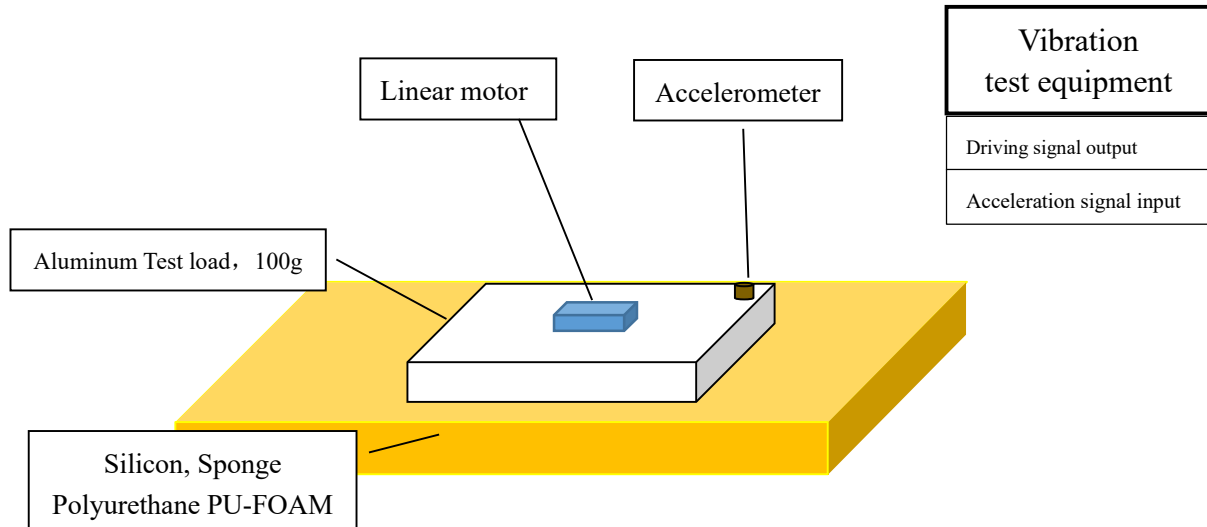


Figure 1. Test method

4-1 将测试电机和加速度传感器按照上图指定尺寸位置固定好

Attach accelerometer and linear motor on the position on test load according to the figure 1.

4-2 信号源接通后 2-3 秒后读数.

Acceleration of linear motor should be measured 2~3 second later when signal source input

4-3 测试过程中，传感器与测试治具要固定牢固，保持测量系统稳定.

At measurement of acceleration, test jig and accelerometer should be stabilized.

4-4 为了测量数据准确，振动量数据取平均值.

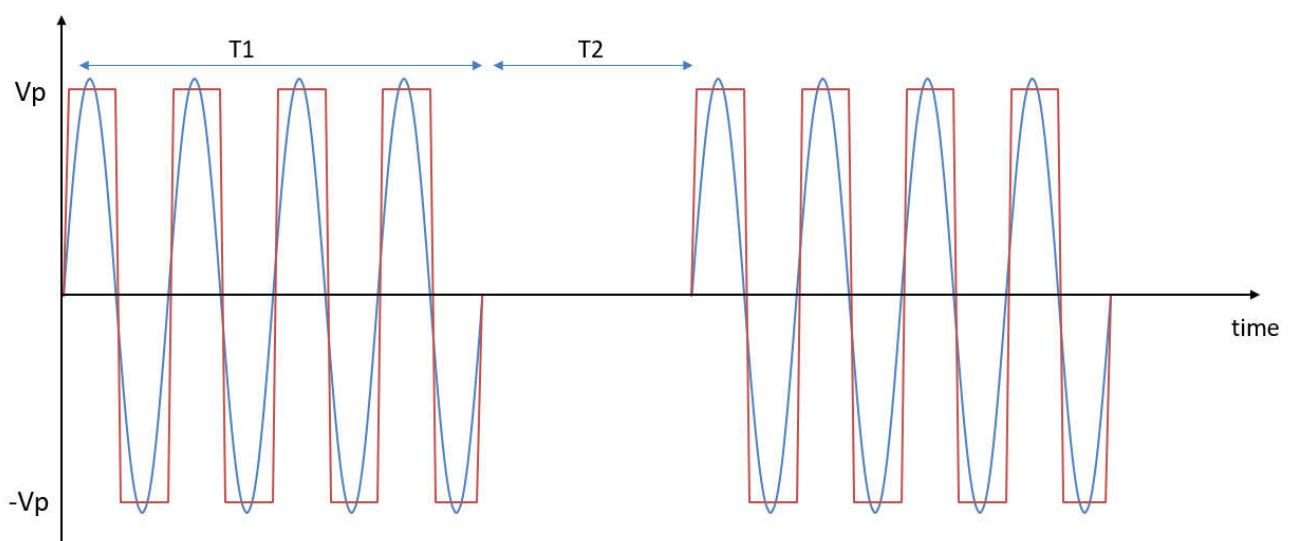
For the precise measurement, acceleration of linear motor is average value.

4-5 在不影响判定结果的情况下，测试环境温度和湿度可以放宽至 5-35°C，45%-85%RH.

If the judgment is not questionable, recognize measurement at 5 to 35°C & relative humidity 45%RH to 85%RH.

5、规格 Specifications

NO.	项目/Items	规格/Specification
5-1	电阻/ Resistance	16 ± 2 Ohm
5-2	额定电压/ Rated Voltage	12Vdc (Voltage of longtime operation not exceed 2.5 Vrms)
5-3	工作电压/ Operating Voltage Range	9~16Vdc with 20kHz PWM
5-4	额定电流/ Rated current	1.0 A Max.
5-5	驱动频率/ Driving Frequency	335 ± 15 Hz
5-6	触觉振动量/ haptic vibration	10.0 ± 2.0 Gpp @ 100gram_load with Haptic pattern
5-6	噪音/ Noise	Test with Haptic pattern Pure sin wave: 45dB(A) Max. PWM square wave: 55dB(A) Max. (at 30cm distance from decibel meter 20~20kHz)
5-7	绝缘电阻/Insulation Resistance	Min. 10M ohm (100V DC input, between motor housing and PCB)
5-8	触觉模式 Haptic Driving pattern	V _p =12Vdc (Refer to Figure 2) T1 : Driving time recommended pure sinewave T2 : Interval time recommended >500ms


Figure 2. Haptic pattern

6、可靠性试验 Reliability Test

NO. 序号	Item 项目	Test condition 试验条件
6-1	高温储存试验 High temperature storage test	温度/Temperature: 120°C 时间/Time: 96H 湿度/Humidity: 常湿/Ordinary Humidity
6-2	低温储存试验 Low temperature storage test	温度/Temperature: -40°C 时间/Time: 96H 湿度/Humidity: 常湿/Ordinary Humidity
6-3	高温高湿存储试验 High temperature/humidity storage test	温度湿度/Temperature Humidity: 85°C85%RH 时间/Time: 96H
6-4	高低温存储试验 High/low temperature Storage test	温度/Temperature: -40°C~115°C 湿度/Humidity: 常湿/Ordinary Humidity 单个周期/1 cycle: (-40°C_12hours + 115°C_12hours) 循环周期数/Circle cycle: 2cycles
6-5	冷热冲击试验 Thermal shock	温度/Temperature: -40°C~85°C 湿度/Humidity: 常湿/Ordinary Humidity 单个周期/1 cycle: (-40°C_30mins + 85°C_30mins), transfer time <300s 循环周期数/Circle cycle: 300cycles
6-6	寿命试验 Life test	测试模式/test pattern: Haptic Driving pattern 寿命周期/life time: Min. 10 Mio cycles 湿度/Humidity: 常湿/Ordinary Humidity 温度分布/Temperature Spectrum 1: 温度循环/temperature cyclic: Min 10cycles

Temperature (°C)	Distribution (%)
-40 °C	6%
23 °C	20%
40 °C	65%
75 °C	8%
85 °C	1%

7、可靠性试验判定 Requirement Reliability Test Judgment

7-1 以下条件必须在试验结束后满足/After test, following specifications must be satisfied.

振动量/vibration: 初始值/Initial Value $\pm 30\%$

F0/Frequency: 初始值 Initial Value $\pm 15\text{Hz}$

噪音/Noise: 初始值 Initial Value +5dB

7-2 试验完毕后需在标准测试条件下放置 2 小时后再测试.

The measurement is conducted after 2hours of recovery under standard test condition after reliability test.

7-3 外表和结构无异常.

There should be no abnormalities in appearance and structure.

8、注意事项 Caution

8-1 电机的驱动 Driving

驱动信号推荐使用交流正弦波或 PWM 方波. 线性电机不能使用直流电源驱动, 会造成线圈发热损坏.
AC sine wave or PWM square wave driving signal is recommended. linear motor could not connect to DC power directly, otherwise coil would be heating and burned damaged

电机的振动声音和输入的驱动信号有关.平滑的正弦波形可以获得更低的噪音.推荐使用有谐振频率 自动追踪功能的驱动芯片。

Motor Noise and sound is related to input signal type. Smooth sine wave could get lower noise. Chip with resonance frequency auto-tracking function is recommended.

电机长时间振动的额定电压为 2.5Vrms AC, 触觉模式下电机驱动电压不超过 9-16Vdc.

Rated voltage of long time vibrating is 2.5Vrms AC, motor operating voltage at Haptic mode is 9-16Vdc.

电机的理论振动量可以达到 15Gpp@100_gram, 使用寿命会减少、试验后参数变化及不确定因素增加。
Motor maximum vibration value could reach 15Gpp@100_gram, but life time will reduce, more deviations after test and other uncertainty increases.

8-2 电机的安装方式 Installation

振动方向上必需固定好, 否则将容易引起噪音.

Linear motor should be fixed to house firmly in vibrate direction, or it will be easy to cause noise.

推荐使用硅胶套或者螺丝固定, 柔软弹性材料(硅胶垫、泡棉)提供减震吸收噪音.

Recommend silicon housing or screwing to fix motor, soft flexible material can provide vibration damping and noise reduction.

8-3 客户有其他使用或实验要求, 在收到规格书时, 请尽快提出; Vybronic将验证并回复评估结果。
超出规格书的条件, 比如电压、驱动方式、试验或者特殊的安装方式可能造成产品失效。

If customers have other usage or test requirement, please propose when receiving specification.

Vybronic will verify and feedback evaluation result.

Beyond specification condition, like voltage, driving, test or special installation may cause failure.

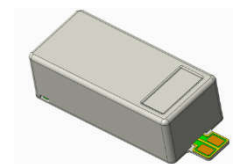
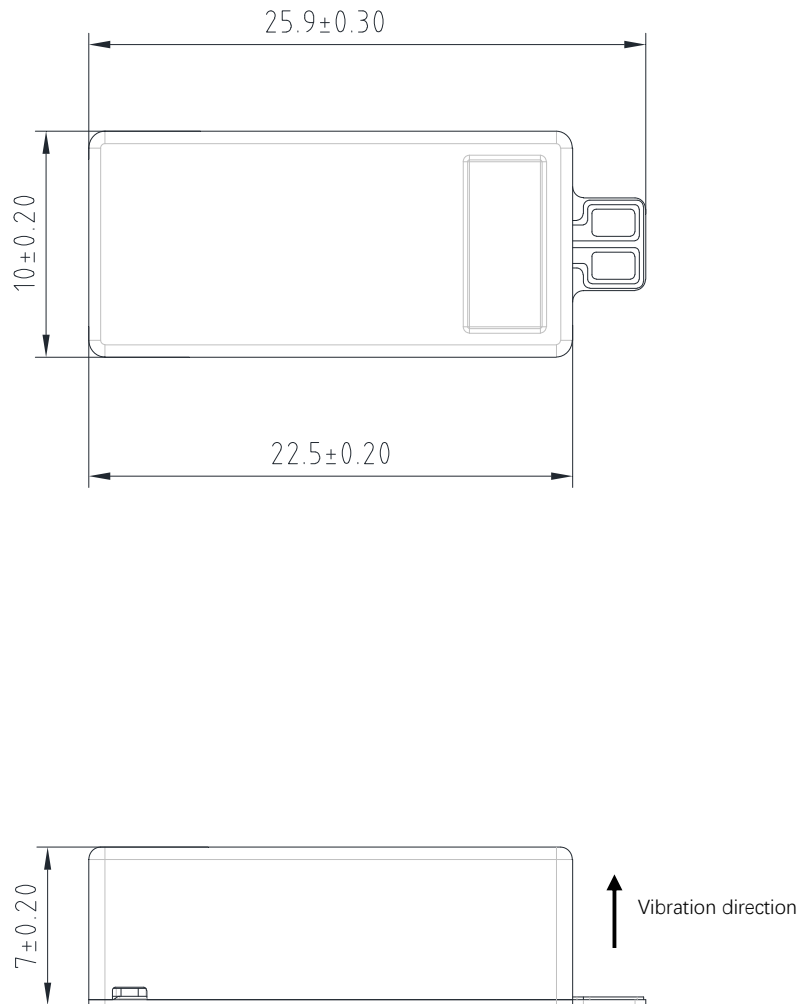
8-4 包装: 请参考包装图纸(也可以依据客户需求作调整).

Packing: Please refer to the packaging drawing. (It can be modified by the request of the users.)

8-5 禁用物质允许含量 Prohibited substances

产品符合 RoHs2.0 要求和欧盟 EU REACH 法规

Compliance with RoHs2.0 requirement and EU REACH regulation.

9、产品外形图 Product Outline Drawing

Figure 3. Outline Drawing

电机外形图如 Figure 3 所示，电路外接方式可根据实际情况定制，可选但不限于：引线、FPC、连接端子等

Outline drawing of vibration motor is as figure 3. External connection can be customized according to the requirement, optional but not limited to: lead wire, FPC, connector type etc.

10、包装规范 Packing Specification**TBD**