

維 盟 科 技 有 限 公 司

EVOwave Technology Co., Ltd.

規 格 書 / Specification

Description:	Coin Type Vibrator
Part No.:	VK103013CXX
Date:	2015.4.13

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1. 適用範圍/General Scope of Application

本說明書適用於扁平式永磁直流電機VK103013CXX 系列。

This specification applies to coin type permanent-magnetic motors DC model VK103013CXX.

2. 使用條件/Operating Conditions

項目/Item		規格/Specifications
2-1	額定電壓 Rated voltage	3.0V DC
2-2	使用電壓範圍 Operating voltage	2.7~3.3V DC
2-3	旋轉方向 Rotation	CW (clockwise) or CCW (counter clockwise)
2-4	使用環境 Operating environment	-20~60℃,常濕/Ordinary Humidity:65±20%RH
2-5	保存環境 Storage environment	-30~70℃,常濕/Ordinary Humidity:65±20%RH

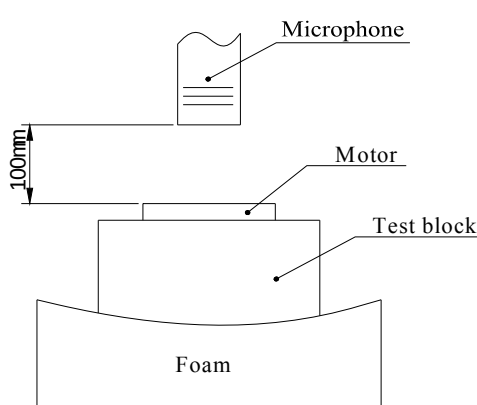
3. 測定條件/Conditions of Measurement

項目/Item		規格/Specification
3-1	溫度 Temperature	25±3℃
3-2	濕度 Humidity	65±20% RH
3-3	電源電壓 Power supply	穩壓直流電源 3.0V。 Constant Power supply 3.0V DC.

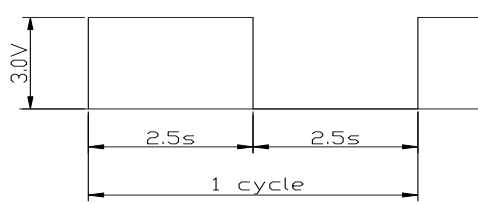
4. 電氣性能/Electrical Characteristics

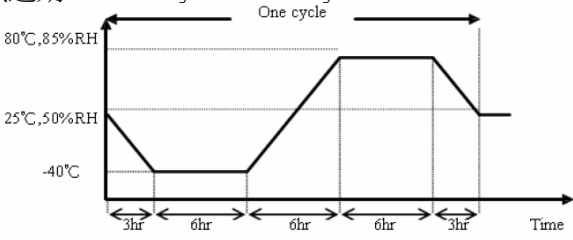
項目/Item		規格/Specification	條件/Condition
4-1	額定轉速 Rated speed	14,000±2,500rpm	額定電壓下。 At rated voltage.
4-2	額定電流 Rated current	90mA Max	
4-3	起動電流 Starting current	120mA Max	在最小起動電壓下起動。 Motor is rotating at minimum starting voltage.
4-4	起動電壓 Starting voltage	2.3V DC Max	
4-5	絕緣電阻 Insulation resistance	10MΩ Min	在 100V 直流下，導線和機殼間。 At DC 100V between lead wire and case.
4-6	端子阻抗 Terminal resistance	32Ω±15%(單相 single posture) 62Ω±15%(雙相 compose posture)	在 25℃ 下。 At 25℃
4-7	反應時間 Reaction time	≥9000rpm	3.0V 標準電壓下，0.15 秒 At 3.0V ; 0.15S

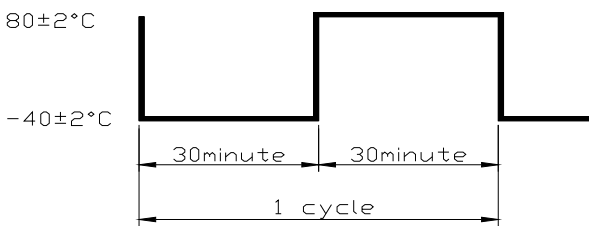
5. 機械性能/Mechanical Characteristics

項目/Item		規格/Specification
5-1	底蓋偏轉強度 Bracket Deflection strength	9.8N 以上 9.8N or more.
5-2	機械噪音 Mechanical noise	小於 50 分貝. A 計權 50dB (A) Max.
	在額定電壓下。At rated voltage. 背景噪音：不大於 28dB. A 計權. Back ground noise 28dB (A) Max. 	

6. 耐久性能/ Reliability Tests

項目/Item		規格/Specification	判定標準/Judgment
6-1	壽命 Lifetime	測試條件/ Test Condition 電壓/ Voltage: 3.0V 負荷/ Load: 振子/Weight 位置/ Position: 軸水準/Horizon 	這個測試操作應該在馬達恢復 4 小時後測試 The measurement is conducted after 4 hours of recovery after climatic test.
6-1-1	室溫壽命測試條件 Room Temperature Life Test Condition	測試環境/ Test Environmental: 溫度 / Temperature : 25°C 濕度 / Humidity : 50% RH 迴圈週期: 100,000 cycles, 繼續試驗至 300,000 cycles / Test Cycle: 100,000 cycles, continue test to 300,000 cycles 檢測週期/ Check cycle 在測試前、測試中、測試後,以及在每個 20,000 次週期時,測試所有的電氣性能 Before,after, between test and every 20,000 cycles to measure the all electrical characteristic	100,000 次後,馬達應符合項 7-1 的要求。 After 100,000 cycles: motors shall be approved as specified in item 7-1. 300,000 次後,馬達可以啟動,無異常噪音 After 300,000 cycles, The vibrator should operate, and cannot have exceptional noise.

項目/Item		規格/Specification	判定標準 /Judgment
6-1-2	低溫壽命測試條件 Low Temperature Life Test Condition	測試環境/ Test Environmental: 溫度 / Temperature : -20°C 迴圈週期/ Test Cycle : 53,000 cycles 檢測週期/ Check cycle 在測試前、測試中、測試後，以及在每個 20,000 次週期時，測試所有的電氣性能 Before, after, between test and every 20,000 cycles to measure the all electrical characteristic	試驗後，馬達應符合項 7-1 的要求。 After the test, motors shall be approved as specified in item 7-1.
6-1-3	高溫、濕度壽命測試條件 High Temperature Humidity Life Test Condition	測試環境/ Test Environmental: 溫度 / Temperature : 65°C 濕度 / Humidity : 95% RH 迴圈週期/ Test Cycle : 53,000 cycles 檢測週期/ Check cycle 在測試前、測試中、測試後，以及在每個 20,000 次週期時，測試所有的電氣性能 Before, after, between test and every 20,000 cycles to measure the all electrical characteristic	
6-2	低溫放置 Low Temperature Exposure	溫度 / Temperature: $-30\pm 2^{\circ}\text{C}$ 時間 / Time: 240h	試驗後，馬達應符合項 7-1 的要求。 After the test, motors shall be approved as specified in item 7-1.
6-3	高溫放置 High Temperature Exposure	溫度 / Temperature: $70\pm 2^{\circ}\text{C}$ 時間 / Time: 240h	
6-4	高/低溫、濕度迴圈存儲測試條件 High/low Temperature Humidity Cycle Storage Test Condition	溫度 / Temperature: $-40^{\circ}\text{C} \leftarrow \rightarrow 80^{\circ}\text{C}$ 濕度 / Humidity: 85%RH 測試週期 / Test Cycle: 6 cycles 	這個測試操作應該在馬達恢復 4 小時後測試 The measurement is conducted after 4 hours of recovery after climatic test.

6-5	振動 Vibration	全振幅 /Displacement : 1.5mm (p-p) 頻率 /Frequency: 10 ~ 55Hz 加速度 /Acceleration: 22m/s ² 週期 /Period: 20min 完成 10~55~10Hz /20 Minutes log sweep10~55~10Hz 方向 /Direction: x, y, z 時間 /Time: 每個方向 2h /Each 2 hours	測試結果應符合項 7-1 的要求。 After the test motors shall be approved as specified in item 7-1.
6-6	自然跌落 Free fall	試驗狀態/Test state:將馬達固定在約 100 克（包括馬達本身）的物體上，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 個面 / 6 faces 次數 /Number of times: 每個面 3 次 / Twice 3 each	測試結果應符合項 7-1 的要求。 After the test motors shall be approved as specified in item 7-1.
6-7	熱衝擊 Heat shock test	試驗迴圈 /Test cycle :50 cycles 	試驗後，馬達應符合項 7-1 的要求。 After the test, motors shall be approved as specified in item 7-1. 這個測試操作應該在馬達恢復 4 小時後測試 The measurement is conducted after 4 hours of recovery after climatic test.

7. 要求/Requirements

項目/Item	判定基準/Requirements
7-1	1)額定轉速/Rated speed: 不低於初始值-30%；不高於初始值+50%/ No lower than -30% of initial data; No more than +50% of initial data. 2)額定電流/Rated current: 不低於初始值-30%；不高於初始值+50% No lower than -30% of initial data; No more than +50% of initial data. 3)端阻/Terminal resistance: 不大於初始值±15% No more than +15% of initial data; No less than -15% of initial data. 4)起動電壓/Starting voltage: 不大於 2.5V 直流電壓 2.5V DC Max 5)絕緣電阻/Insulation resistance: 大於 10MΩ/ 10MΩ Min

8. 使用時注意事項/Matters to be paid attention to when using motor

8-1 必須按照規格書標準使用，否則性能和壽命都將受到相當地減少，必須注意電壓的使用範圍。
Unless it is used in accordance with the specifications, the performance and life may be considerably reduced. Due attention should be paid to voltage and range for use.

8-2 建議馬達在六個月內使用，不要在以下環境中使用及保存：

1. 高溫和高濕的場所；
2. 腐蝕性氣體,如： H_2S 、 SO_2 、 NO_2 、 Cl_2 ；
3. 生銹場所。

Advice uses this motor within 6 months as avoiding as possible.

Avoid use or save the motor in the following environment.

1. High temperature and high humidity area
2. Corrosive gas such as H_2S , SO_2 , NO_2 , Cl_2 .
3. Dusty area.

8-3 注意處理馬達的工作環境，避免含鐵質等物體被馬達吸住，否則馬達將會產生雜訊，性能會降低，從而減少產品可靠性。

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.

8-4 應確信本產品不會與相關標準、法律、政令相背。

Please confirm enough no problems of standards and laws and ordinances on your cellular phone.

8-5 拿馬達時，要輕拿輕放。

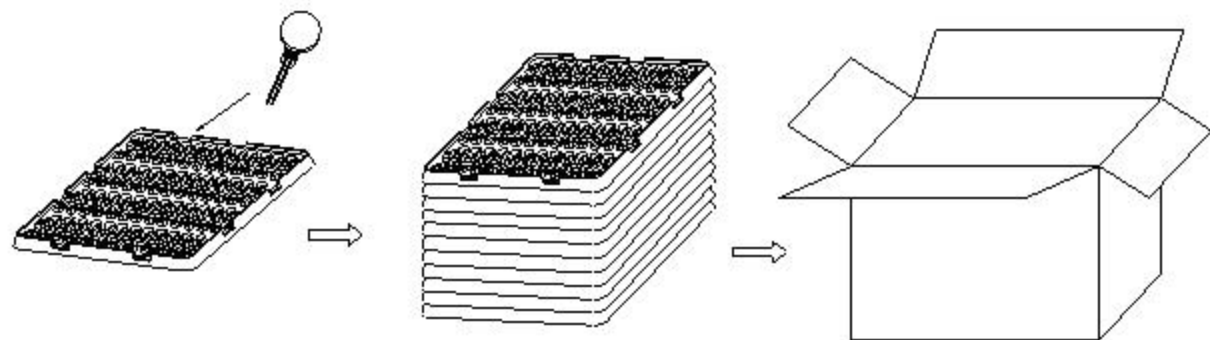
To handle the motor, hold the motor case softly.

8-6 鋼板面或邊緣有少許鏽斑是允許的。

Rust of plate (steel) and similar edge should be OK.

扁平系列馬達包裝

Pack drawing of coin type



100PCS(1 tray)×10

1000PCS(1 bundle)

1 box×2

Remarks:

4000PCS/CTN: 45cm×28cm×20cm

6000PCS/CTN: 45cm×28cm×30cm

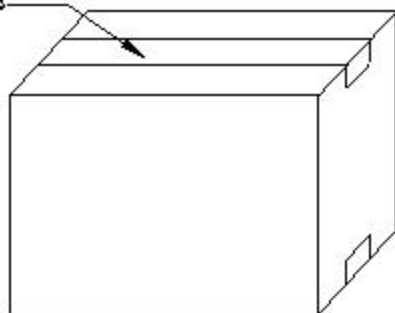
包裝試驗要求:

沿外包裝箱±x, ±y和±z方向, 距水泥地面1.5m高度, 各自由跌落2次, 馬達應無機械損傷, 電氣性能仍符合標準要求。

Drop Test with carton:

Drop the carton in the axial directions of ±x, ±y, ±z onto the concrete floor from 1.5m height, drop twice each direction. After drop test, no mechanical damage to motors, and the electrical performances remain unchanged.

OPP TAPE



10. 外形圖/ OUTLINE DRAWINGS

