

INEED ELECTRONICS (HONGKONG) LIMITED

Company No.: 1653395 - Registered Office: Room 1103, Hang Seng Mongkok Building, 677 Nathan Road, Mongkok, Kowloon, Hong Kong
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Tel: (+86) 769 2289 1073 Fax: (+86) 769 2289 1076 URL: <http://www.ineed.hk>

產品規格說明書

Product Specification

產品名稱 Product Name	Linear Vibration Motor	規格書號 Specification No.	LM-0022
產品編碼 Product Part No.	C0832BE03C15	規格書版本號 Version No.	V1
規格描述 Description	Ø8x3.2T, 235Hz, 1.8Vrms AC	發佈日期 Date of Release	2016-07-30

貴司確認本產品樣品後，在決定採購本產品之前，請您仔細閱讀本產品規格說明書，並在客戶承認欄內簽名及蓋章並回傳此頁給我司相關人員備案。After you approve the product samples, please read this specification carefully and return this page to us with your signature and company chop in below *Customer Approval* table before you decide to purchase this product.

客戶/最終用戶承認 Customer/ End-User Approval				
簽名及蓋章 Signature & Company Stamp	工程 Engineering	品質 Quality	生產 Production	採購 Procurement
日期 Date				

聲明：本產品由我們在重慶的高技術工廠設計製造，完全符合歐盟 2005/618/EC 環保指令相關要求。

This product is designed and manufactured by our high-tech plant in Chongqing city, absolutely compliant with EU 2005/618/EC directives.

愛立德重慶工廠承認 INEED Chongqing Factory Approval			
簽名及蓋章 Signature & Company Stamp	批准 Approved by	審核 Checked by	編制 Prepared by
	張國付 ZHANG GUOFU	李傑 LEE JIE	陳君 CHEN JUN
日期 Date	2016-07-30	2016-07-30	2016-07-30

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規格書 SPECIFICATIONS

1. 適用範圍/General Scope

本規格書適用於線性振動馬達 C0832BE03C15。

This specification applies to linear vibration motor C0832BE03C15.

2. 使用條件/Operating Conditions

序號 No.	專案/Item	規格/Specification
2-1	額定電壓/Rated Voltage	1.8Vrms AC, Sine wave
2-2	使用電壓範圍/Operating Voltage	0.1~1.9Vrms AC
2-3	振動方向/Direction of vibration	Z axis
2-4	使用環境/Operating Environment	Temperature: -20°C~+60°C; Relative Humidity: 65±20%RH
2-4	輸入頻率/Input Frequency	235±0.1Hz
2-5	保存條件/Storage Conditions	Temperature: -30°C~+70°C; Ordinary Humidity: 65±20%RH

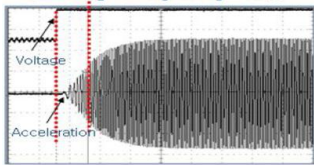
3. 測定條件/Measuring Conditions

一般情況下，馬達可以在 22~28°C，相對濕度 45~85%RH 的環境中測試。為保證一致性，測試應在下表規定內進行。

Usually, the motors could be tested at 22~28°C, 45~85%RH. To ensure its conformity, they must be tested at below required environment:

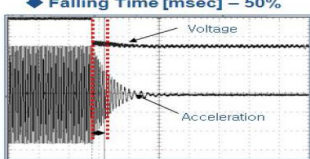
序號 No.	專案/Item	規格/Specification
3-1	溫度/Temperature	25°C±3°C
3-2	濕度/Humidity	65±20%RH
3-3	氣壓/Air Pressure	1011±40 hpa

4. 性能標準/ Characteristics & Parameters

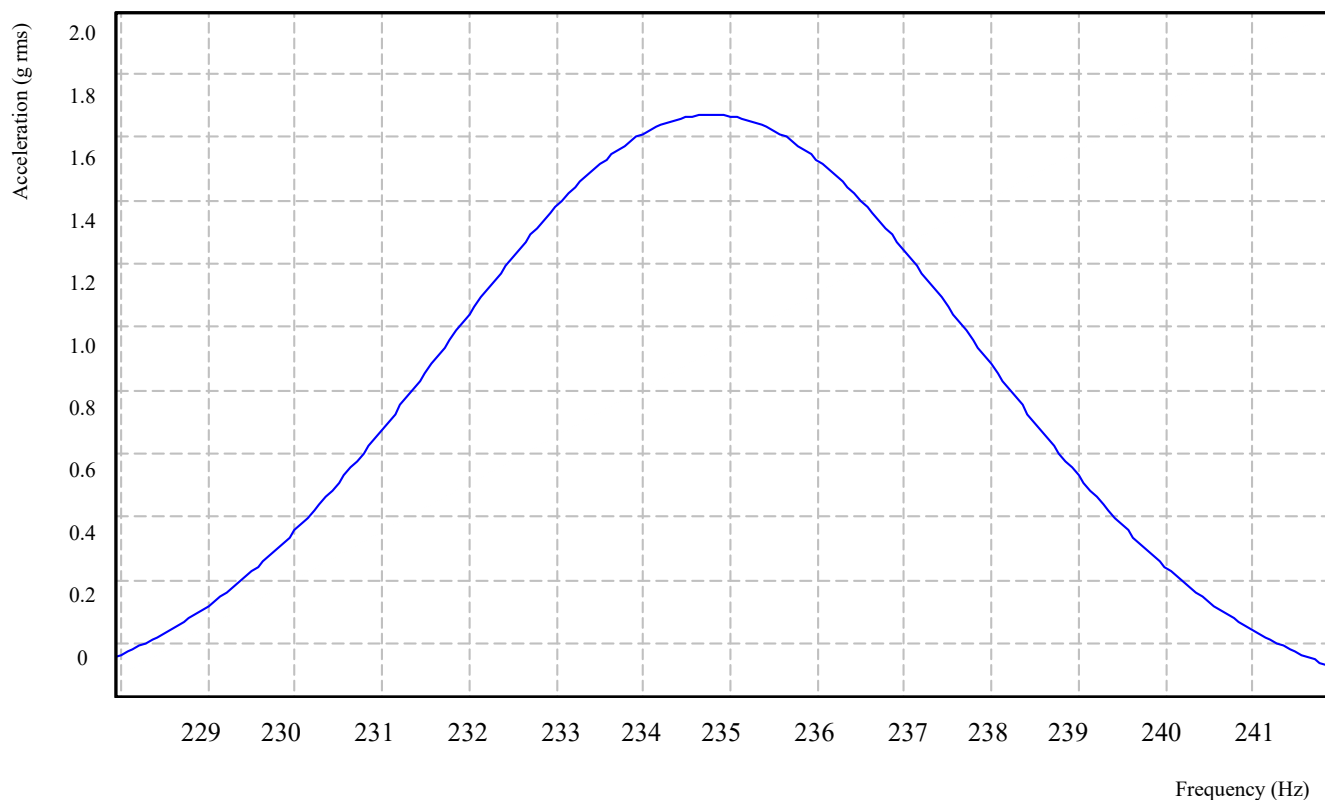
序號 No	專案/Item	規格/Specification	測試條件/Test Condition
4-1	額定電壓/ Rated Voltage	1.8Vrms AC, Sine wave	1.8Vrms AC, Sine wave
4-2	額定頻率 Rated Frequency	235Hz	235Hz, 1.8Vrms AC, sine wave
4-3	Rated Current 額定電流	≤80mA rms	
4-4	Acceleration/ F0 點振動量	1.2~1.70Grms	
4-5	Acceleration at Low Temperature Operating/ F0 低溫振動量	≥1.0Grms.	-25°C, 235Hz, 1.8Vrms AC, sine wave
4-6	Frequency Characteristics 頻率特性	235±5Hz (Refer to Figure I)	
4-7	Rise Time 下降時間	<p>≤50ms /時間達到最大振動的 50%</p> 	235Hz, 1.8VrmsAC, sine wave

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序號 No	專案/Item	規格/Specification	測試條件/Test Condition
4-8	Falling Time/下降時間	$\leq 80\text{ms}$ 斷電後時間達到最大振動的 50% 	235Hz, 1.8VrmsAC, sine wave
4-9	絕緣電阻/Insulation Resistance	$\geq 10\text{M}\Omega$ (100V)	在 100V 直流電壓下機殼與導線 At DC 100V Between wire and case
4-10	阻抗/Resistance	$23\Omega \pm 10\%$	在 25°C 下/Below 25°C
4-11	Leakage Magnetic Flu	- 支架表面: ≤ 20 Gauss - Bracket Surface: ≤ 20 Gauss - 測試條件 /Measure condition: Figure 3 - 測試設備 : 高斯計 - Measure equipment: Gauss Meter - 測試方法 : Bracket 面/Case 測試表面中心 - Measure method: Bracket face/ Test surface center of case - Bracket 面/Case 和 Sensor 間隔 1mm	

Acceleration Characteristics



圖一/ Figure I

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5. 機械性能/Mechanical Characteristics

序號 No	專案/Item	規格/Specification	測試條件/Test Conditions
5-1	噪音/Noise	≤50dB. (10cm distance from microphone/ 距離麥克風 10 cm 的位置	235Hz, 1.8VrmsAC, sine wave
5-2	機械噪音/Noise by mechanical touch (Noise_T)	≤35dB. 噪音是高频動作引起 Noise by High frequency	235Hz, 1.8VrmsAC, sine wave
5-3	高频噪音/Noise by high frequency (Noise_B)	≤35dB.	測試設備型號 : Bako 2120C Measurement equipment: Bako 2120C 測試方法 : 4.85KHz~5.3KHz 從 Harmonic 檢測所 述組分的總和 噪音 Measurement method: the sum of noise from all groups 4.85KHz~5.3KHz
5-4	和諧波噪音/Noise by THD (Total Harmonic Distortion)	SPEC: ≤25%	235Hz, 1.8Vrms AC, sine wave) 測試設備型號 : Bako 2120C (Total Harmonic Distortion) 測量方法 : 驅動頻率(Fn=235Hz)Harmonic 諧波
5-5	寬頻噪音/Sweep Noise by mechanical touch (Sweep Noise_T)	SPEC: ≤35dB	2.0Vrms AC, 232~238Hz Sweep, sine wave, 2sec 測試設備:測試設備型號: Bako 2120C Measurement condition: Bako 2120C 測試方法:Harmonic (235Hz 供給)以外的 Measurement method: Harmonic except (235Hz 供給)
5-6	馬達尺寸/Size of motor	Ø8*3.25	slide calipers
5-7	原子線抗拉強度/Anti-pulling strength of atomic line	≥5N(0.5kgf)	破壞性測試, 對原子線沿著軸向施加推力 Destructive test, give pulling force to the atomic line along to the axial direction.

6. 測試方法/Test Method

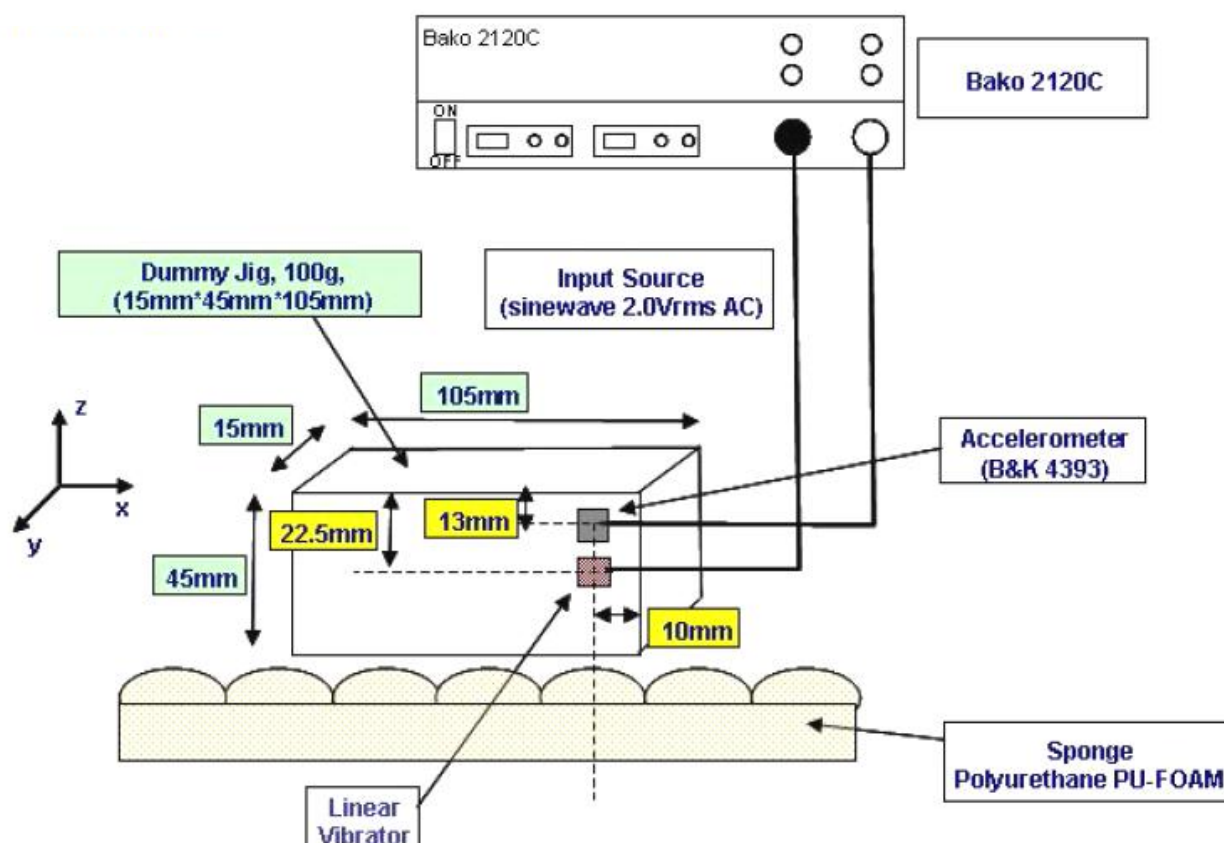


Figure II / 圖 2

6-1 線性馬達加速度測試安裝位置(參考圖 2)

Linear Vibrator/ Accelerometer mounting position (refer to Figure II)

6-2 線性馬達/加速度測試 sensor

Linear Vibrator/Accelerometer (sensor)

6-3 線性馬達測試虛擬 Jig 厚度 15mm

Linear Vibrator Dummy Jig 15mm

6-4 虛擬 JIG 位置尺寸

Dummy Jig position

6-5 虛擬 Jig 15mm*105mm

Dummy Jig 15mm*105mm

6-6 虛擬 Jig 應放置在泡棉上

Dummy Jig should be located on Sponge

6-7 加速度測試條件

Measurement of Acceleration

6-8 輸入電壓: 1.8VrmsAC, sine wave

Input Source: (1.8VrmsAC, sine wave)

6-9 輸入電壓 2~3 後, 測定線性馬達的加速度

Acceleration of Linear Vibrator should be measured 2~3 seconds later when source is input (1.8Vrms AC, sine wave)

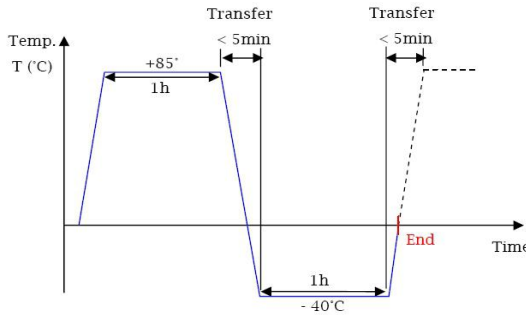
6-10 為了保證測定的精確性, 測定三次取三次平均值

To ensure the accuracy of measurement, take the average data (repeated 3 time) of acceleration.

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7. 耐久性能/Durability Characteristics

序號 No	專案/Item	測試條件/Test Condition	判定標準/Judgment
7-1	壽命試驗 Lifetime Test	1. 試驗迴圈/Test cycle: 1,000,000 cycle/ (1cycle: 2sec on/1sec off) 2. 測試設備/Test equipment: 壽命試驗機/Lifetime test machine. 3. Input voltage : 1.8VrmsAC, Sine -wave; Input frequency: 235Hz	試驗後,馬達應符合 8-1 項的要求/ The test result should meet the requirements of item 8-1.
7-2	低溫度放置試驗 Storage Test at Low Temperature	溫度/Temperature: $-40\pm 2^{\circ}\text{C}$ 時間/Time : 96H	在常溫下放置 4 小時後, 馬達應符合 8-2 項要求/ After 4-hour storage, the test result should meet the requirements of item 8-2.
7-3	高溫度放置試驗 Storage Test at High Temperature	溫度/Temperature: $80\pm 2^{\circ}\text{C}$ 時間/Time : 96H	
7-4	高濕度放置試驗 Storage Test at High Humidity	溫度/Temperature: $55\pm 2^{\circ}\text{C}$ 濕度/Humidity: 95%RH 時間/Time : 96H 無水氣凝結/No condensation of moisture	
7-5	振動試驗 Vibration Test	馬達固定治具重量 180g The motor fixed fixture weight 180g 全振幅/Double amplitude: 1.5mm(p-p) 頻率/Frequency: 10~55Hz; 加速度/Acceleration: 22m/s 週期/Period: 10Minutes log sweep(10~55~10Hz) 條件/Condition: 在樣機中, 在 3 個直的軸方向每個方向做 1H 測試/ Test the samples at three straight shaft directions for ten minutes.	測試結果應符合 8-2 項要求/ The test result should meet the requirements of item 8-2.
7-6	自然跌落試驗 Drop Test	試驗狀態/Test status: 將馬達固定在重量約 180g (包括馬達本身) 的物體上, 落向水泥地面/Fix the motor on a object weighted about 180g (include the motor) and drop it to the cement floor. 高度/Height: 1.5m 方向/Direction: $\pm X, \pm Y, \pm Z$ 次數/ Number of the test: 每個方向 3 次/ times for each direction	測試結果應符合 8-2 項的要求/ The test result should meet the requirements of item 8-2.
7-7	溫度衝擊試驗 Shock Test at Extreme Temperatures Change	測試模式/Test mode: 1 hour at -40°C , 1 hour at 85°C , as one cycle, Transfer time between extreme temperatures: <5 分鐘 /5min 迴圈次數: 15cycles 	在常溫下放置 2 小時後, 測試結果應符合 8-2 項要求/ After 2 hour exposure in ordinary temperature and humidity and the test result should meet the requirements of item 8-2.

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8. 耐久性實驗後判斷要求/Requirements after Durability Tests

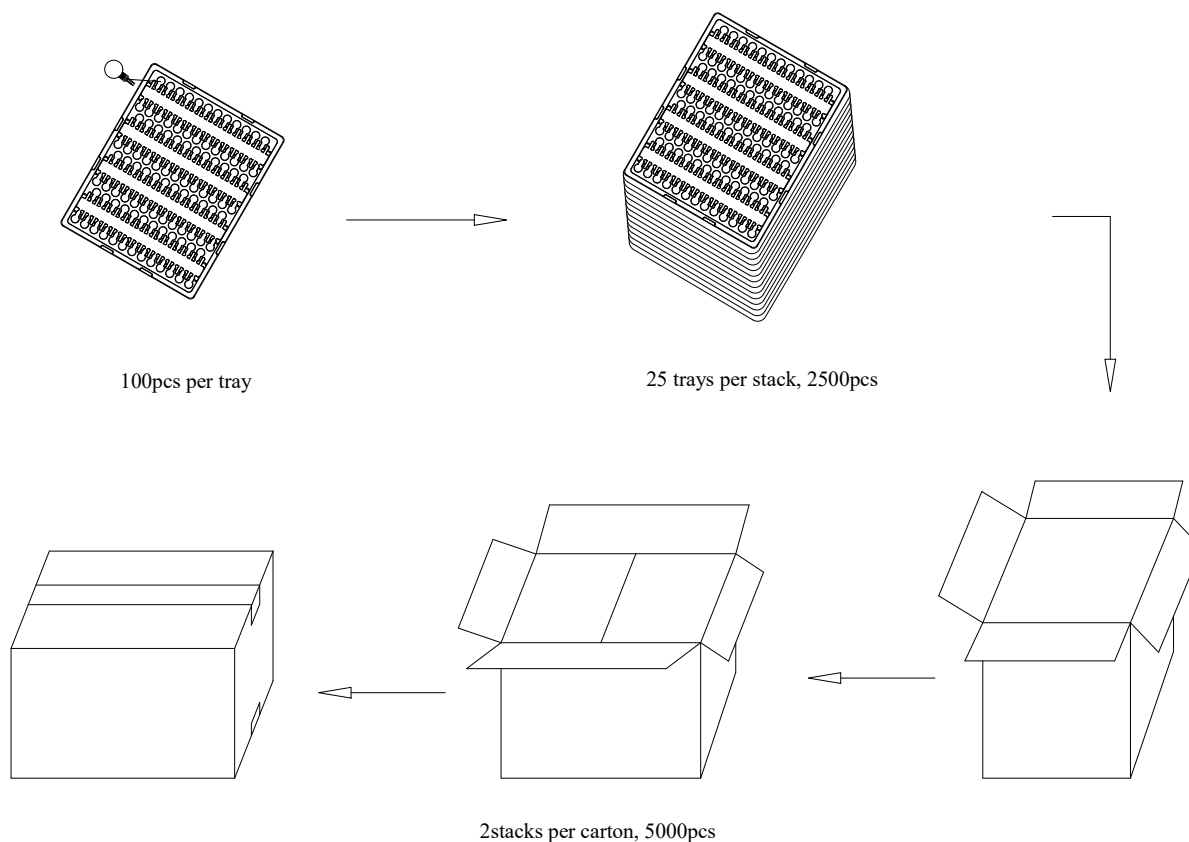
序號 No.	專案 Items	可靠性測試後期要求 Requirements after Reliability Tests
8-1	振動量變化率 Change Rate of Acceleration	不超出初始值的±30% No less than -30% of initial data, no more than +30% of initial data.
	額定電流 Rated Current	≤80mA _{rms}
	噪音 Noise_T	≤35dB
	外觀及結構 Appearance & Structure	無異常發生 No abnormal matters

9. 使用注意事項/ Cautions in Use

序號 No.	使用時注意事項 Precautions in Use
9-1	必須按照此產品規格說明書使用，否則性能和壽命都將受到相當地減少。尤其注意電壓的使用範圍。 Please operate the motors in accordance with this specification, especially be careful with the operating voltage ranges, otherwise the performance and lifetime of the motors would be considerably reduced.
9-2	建議馬達收貨後六個月內必須使用。不可以在以下環境中使用及保存馬達： - 高溫高濕區域； - 腐蝕性氣體環境，如：H ₂ S、SO ₂ 、NO ₂ 、Cl ₂ ，等等； - 易導致金屬物生銹場所。 It is suggested to use the motors within 6 months after delivery. It is not allowed to use or store the motors at such environments: - High damp and high temperature areas. - Places full of corrosive gas, such as H ₂ S, SO ₂ , NO ₂ , Cl ₂ , etc. - Areas that easily cause metals rusty.
9-3	注意清潔工作環境，避免含鐵質雜物被馬達吸進，否則馬達將會產生雜訊，性能會受影響，從而降低產品可靠性。 Please pay much attention to clean the working environment, to avoid iron sundries from being sucked into the motors; otherwise, the motors would make noise, the performance would be affected, and reliability would be reduced.
9-4	拿馬達時，要輕拿輕放。不允許隨意丟置。 Please place the motors gently and carefully in use. It is not allowed to throw it at random.
9-5	機殼鋼板面或邊緣有少許鏽斑是允許的。 It is allowed to have a little rust on the brim of steel plate of the housing.
9-6	因為測試設備可能有誤差，所以±5%的轉動頻率偏差是允許的。 It is allowed to have a tolerance of ±5% rotation frequency due to discrepancies between different testing equipment.
9-7	用戶自身應確信使用本產品不會與相關標準、法律、政令相背。 Users shall assure themselves that they do not violate related standards, laws or any political policies when they use this product.
9-8	為了進一步提升產品品質，在不改變電機主要性能參數及機械尺寸前提下，本司有權自主採用新型可靠材料或更新製造工藝而不需要提前通知各位客戶。 Under the preconditions that will not change the main parameters and mechanical dimensions, we reserve the right to choose new reliable materials or renew the manufacturing processes to improve the quality of our products without sending advance notice to the buyers.

10. 包裝說明/Packaging

10-1 包裝方式說明 Packaging Method



10-2 包裝明細說明 Packaging Details:

Qty/ Carton	Size of Carton: L*W*H	Net Weight/ Carton	Gross Weight/ Carton
5,000PCS	34CM*24CM*24CM	≈4.5KGS	≈5.5KGS

10-3 包裝實驗要求 Test Requirements on Packaging:

沿外包裝箱 $\pm X$ 、 $\pm Y$ 和 $\pm Z$ 方向，距水泥地面 1.5 米高度，各自由跌落兩次，馬達應無機械損傷，電氣性能仍符合規格要求。

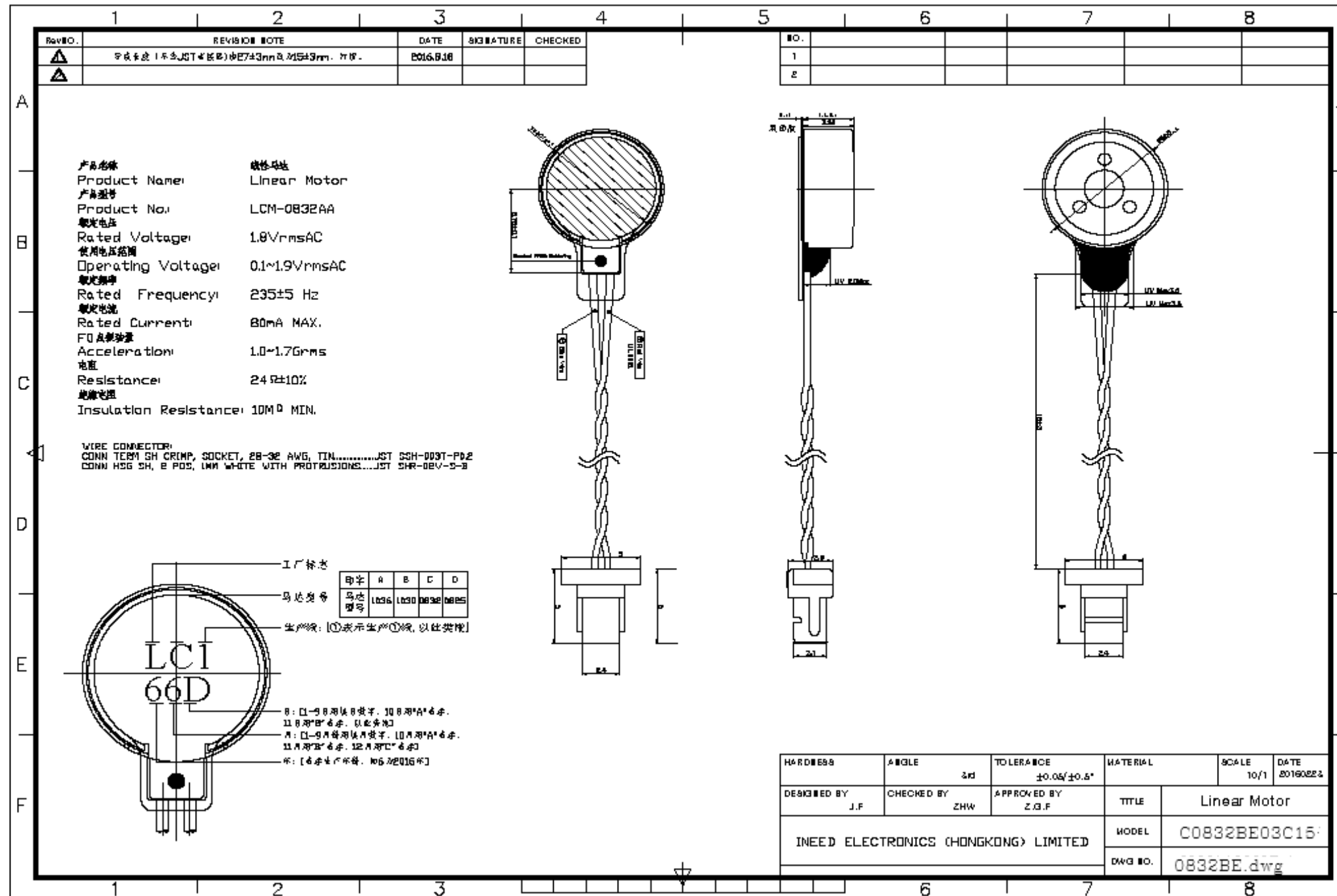
Drop the carton from a height of 1.5 meters twice in each direction of $\pm x$, $\pm y$, and $\pm z$. After dropping, motors shall have no mechanical damages. Electrical performance shall meet the specifications.

10-4 其他說明 Other Notes:

上述包裝尺寸及包裝方式僅供參考。本司有權根據實際訂貨數量改用其他包裝方式以便保護好產品，以免運輸途中損壞。The above packaging dimensions and packaging method are for reference only. We reserve the right to use other packaging method or materials as per actual order quantities to protect the goods well in transportation to avoid any damage.

11. 外形圖/ Mechanical Drawing

外形圖/ Mechanical Drawing



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