

愛立德电子（香港）有限公司

INEED ELECTRONICS (HONGKONG) LIMITED

Company No.: 1653395 - Registered Office: Room 02,21/F, Hip Kwa Commercial Building, 38 Pitt Street, Yau Ma Tei, Kowloon, Hong Kong
China Office: Room 4-1904, Yuan Meng Ya Ju, Zongbu 3rd Road, Songshanhu North Hi-Tech Park, Dongguan, Guangdong 523808, China
Tel: (+86) 769 2289 1073 Fax: (+86) 769 2289 1076 URL: <http://www.ineed.hk>

產品規格說明書 SPECIFICATION FOR APPROVAL

客戶 *Buyer Name*:

專案 *Application*:

品名 *Part Name*: Micro Motor

型號 *Part No*: IND-YQ0410L-001

客戶確認 *Buyer Approval*

料號 <i>Buyer Part No.</i>	
簽章 <i>Signatures & Company Stamp</i>	

擬制 <i>Designed by</i>	魏友平 Wei Youping
審核 <i>Checked by</i>	王飛 Wang Fei
批准 <i>Approved by</i>	陳峰 Chen Feng

規格說明Specification

編號Spec No.:	LL-3-J-20065
版本Version:	A.1
日期Date:	2020-04-07

Index, Content, and History of Revision

No.	Contents	Page
0	Index, Content, and History of Revision	1
1	General Scope	2
2	Operating Conditions	2
3	Measuring Conditions	2
4	Mechanical Specifications	2
5	Electrical Performance	2
6	Reliability	3
7	Environmental	3
8	Caution in Use	3
9	Packaging	4
10	Mechanical Drawing	5
11	Motor Performance Curve	6

History of Revision

規格說明 Specification

編號Spec No.:	LL-3-J-20065
版本Version:	A.1
日期Date:	2020-04-07

1. General Scope

The specification applies to micro DC motor, part no.: IND-YQ0410L-001

2. Operating Conditions

No.	專案/Item	規格/Specification
2-1	額定電壓Rated Voltage	1.3 V DC
2-2	使用電壓範圍Operating Voltage	1.1-1.6 V DC
2-3	旋轉方向Direction of Rotation	CW.
2-4	馬達位置Position of Motor	All positions.
2-6	工作溫度Working Temperature	-30 ~ 70°C, 65±20%RH. No moisture condensation.
2-7	保存溫度Storage Temperature	-40 ~ 80°C, 65±20%RH. No moisture condensation.

3. Measuring Conditions

The measurement at 20°C & 65%RH is standard. If the judgment is not questionable, recognize measurement at 5°C to 35°C & relative humidity 45% to 85%. Direction of motor is shaft horizontal.

4. Mechanical Specifications

No.	專案/Item	規格/Specification
4-1	外觀Appearance	By visual examination, no obvious evidence of mechanical damage and rust.
4-2	軸向間隙Axial End Play	0.05-0.2mm
4-3	尺寸Dimensions	Refer to 10. Mechanical Drawing

5. Electrical Performance

No.	專案/Item	規格/Specification	條件及備註/ Conditions & Remarks
5-1	空載轉速 No load Speed	21,000±2500 rpm	Tested at Item 2-1 rated voltage.
5-2	空載電流 No load current	50 mA Max	Tested at Item 2-1 rated voltage.
5-3	啟動電壓Starting Voltage	1.0 V DC Max	At rated load(Counterweight) any position of rotor
5-4	堵轉電流Stall current	125 mA Max	Tested at Item 2-1 rated voltage.
5-5	端子阻抗Terminal Resistance	13 Ω±20%	Tested between the two lead wires.
5-6	絕緣電阻Insulation Resistance	1 MΩ Min	Tested at DC 100V between the wires and housing.
5-7	負載數據Test data with load	Refer to 10. Mechanical Drawing	
5-8	機械噪音Mechanical noise	50dB (A) max.	See below sketch of noise test:
	在額定電壓、額定負載（振子）下 背景噪音：不大於 28dB.A 計權 測試儀器：B&k 夾具重量：700g At rated voltage and rated load (Counterweight). Back ground noise 28dB(A) Max Measuring instruments: B&k Weight of jig:700g		

規格說明 Specification

編號Spec No.:	LL-3-J-20065
版本Version:	A.1
日期Date:	2020-04-07

6. Reliability

No.	專案/Item	測試條件/Specification	判定標準/Judgment
6-1	低溫貯存放置 Low Temperature Storage Test	Temperature: $-40\pm 2^{\circ}\text{C}$ Time: 96hrs	After the tests, after two hours placed at room temperature, the motors shall meet: 1) No load speed: varies within $\pm 30\%$ of initial data. 2) No load current: varies within $\pm 30\%$ of initial data. 3) Starting voltage: 1.0 V DC max.
6-2	高溫貯存放置 High Temperature Storage Test	Temperature: $60\pm 2^{\circ}\text{C}$ Time: 96hrs	
6-3	濕度放置 Exposure to High Humidity	Temperature: $40\pm 2^{\circ}\text{C}$ Humidity: 90~95RH Time of Exposure: 96hrs	
6-4	振動 Vibration	Displacement : 1.5mm (p-p) Frequency: 10 ~ 55Hz Acceleration: 22m/s^2 Period: 20min 10~55~10Hz 20 Minutes log sweep 10~55~10Hz Direction: x, y, z Time: 2h /Each 2 hours	After the tests, the motors shall meet: 1) No load speed: varies within $\pm 30\%$ of initial data. 2) No load current: varies within $\pm 30\%$ of initial data. 3) Starting voltage: 1.0 V DC max.
6-5	自然跌落 Free Drop Test	Test state: Set the motor to the approximately 100g (include the motor) weight of block drop the motor on the concrete floor. Height: 1.5m Direction: 6 faces Number of times: Twice 2 each	

7. Environmental

The product shall be RoHS compliant.

8. Caution in Use

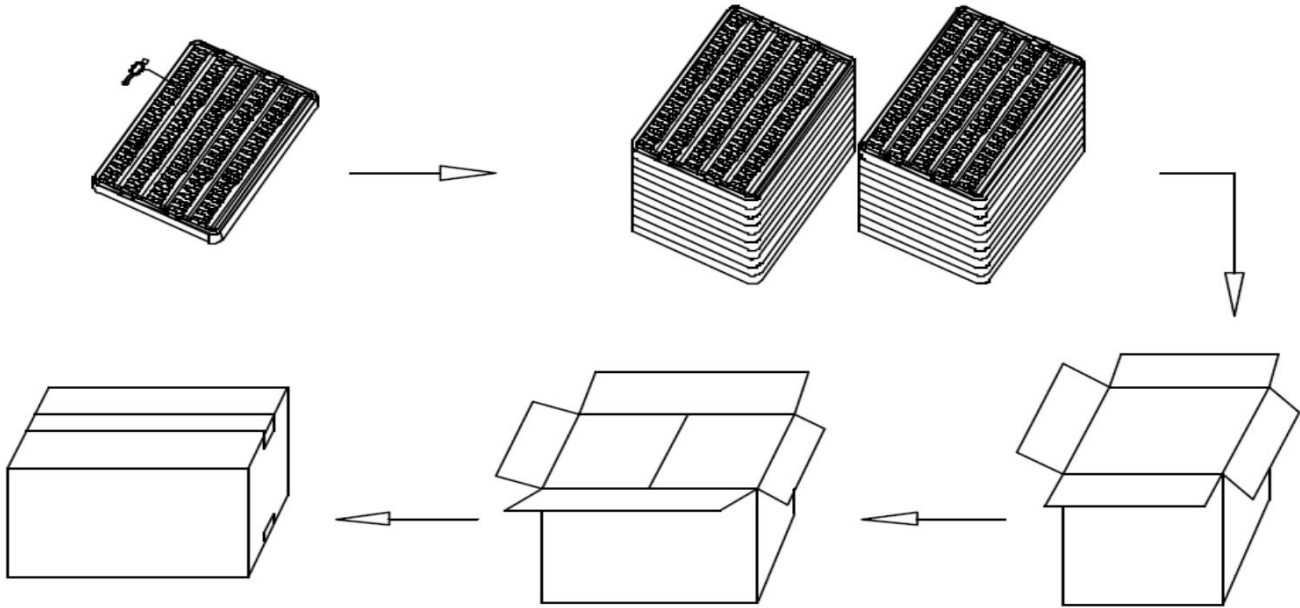
8-1	Place the motors carefully in transportation to avoid any damage to the motor body; otherwise, its functions would be damaged due to collision.
8-2	Do not leave and use the motors in the environment of high temperature, high humidity and corrosion gas; otherwise, it would cause damage to the functions.
8-3	Do not lock the shaft and bearing; otherwise, the coils would be very hot and burn up and the motor will stop working.
8-4	It is not permitted to place the motor with magnetic objects; otherwise, it may cause the functions fall down.
8-5	Use the motors within six months after you buy it. Do not place it at moisture place. Ventilation is required in your store.

規格說明 Specification

編號Spec No.:	LL-3-J-20065
版本Version:	A.1
日期Date:	2020-04-07

9. Packaging

- 9-1 100 pcs/tray, size of tray: 230mm*158mm*15mm.
- 9-2 20 trays/stack, Qty/ stack: 2000pcs.
- 9-3 2 stacks/inner box, Qty/inner box: 4000pcs.
- 9-4 2 inner boxes/carton, size of carton: 360mm*260mm*170mm..
- 9-5 Seal the carton, indicate the quantity and lot number on it.

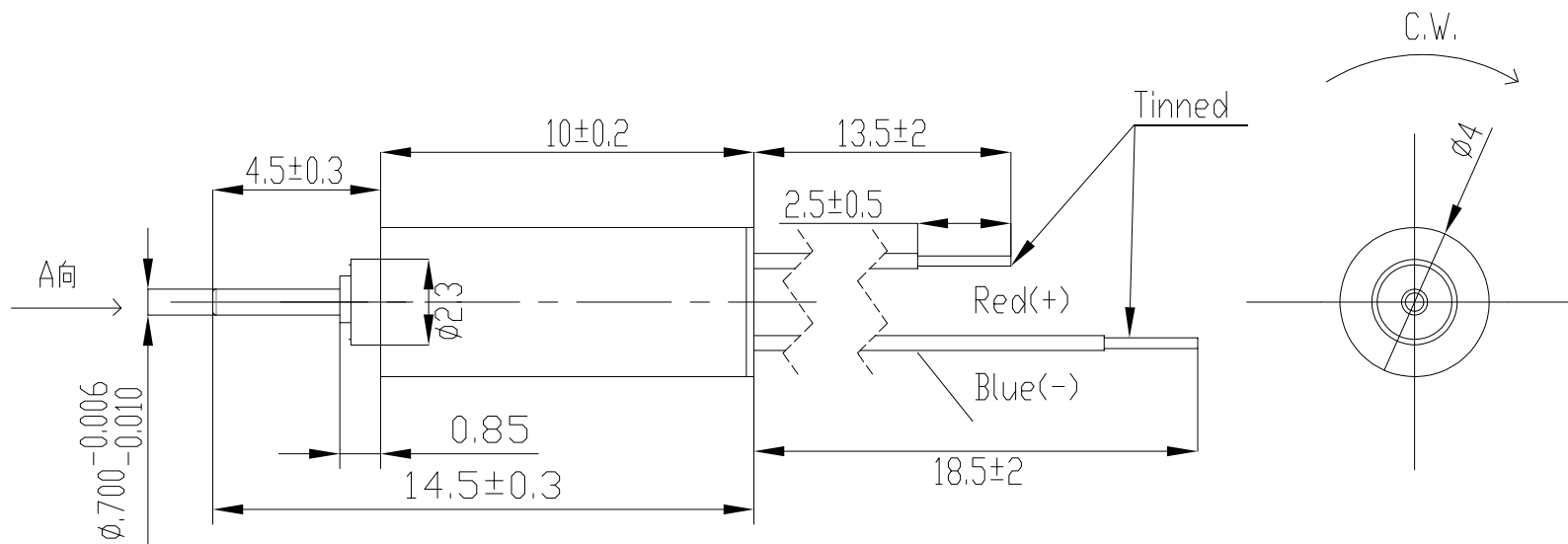


9-6 Packaging Drop Tests

Standard height of drop: 75cm for gross weight within 9kgs; 60cm for gross weight between 9kgs and 23kgs.

Drop one time from each plate, totally 6 times. Drop one time from each corner, totally 3 times.

No damage to the motors after the packaging drop tests.



技术要求/Technical Requirements:

1. 额定电压/Rated voltage: 1.3 V DC
2. 空载电流/No load current: 50mA Max
3. 空载转速/No load speed: 21000 ± 2500 rpm
4. 堵转电流/Stall current: 125mA Max
5. 端子阻抗/Terminal resistance: $13\Omega (\pm 20\%)$
6. 起动电压/Starting voltage: 1.0VDC Max
7. 导线规格/Lead wire spec: AWG32 UL3302
8. 未注线性公差为/Unmarked tolerance: ± 0.1 mm
9. A向压力/Pressure along A direction: 20N Max

INEED ELECTRONICS (HK) LTD					
Designed By	W.Y.P				Outline Drawing
Checked By	W.F		标记	比例	IND-YQ0410L-001
Approved By	C.F			5:1	

MOTOR PERFORMANCE CURVE

电机性能曲线

客户名称 Customer _____
 电机型号 Motor Model IND-YQ0410L-001

额定电压 Rated Voltage 1.3 V/DC
 额定负荷 Rated Load _____
 测试日期 Test Date 2020.04.07

Parameters Table 性能参数表		F/L 空载	Eff (max) 最大效率点	P (max) 最大功率点	Stall 堵转点
转矩 Torque :	g.cm	0	0.09	0.13	0.27
转速 Speed :	RPM	19800	13117	9900	0
电流 Current :	mA	25	49.1	60.6	96.3
输出 Output :	W	0	0.01	0.01	0
效率 Efficiency :	%	0	19.1%	17.2%	0

特征参数 Parameters		
转矩常数 Torque Constant :	3.752	g.cm/A
转速常数 Speed Constant:	20571	RPM/V
速度/转矩常数 Motor Regulation:	74007.9	Rpm/g.cm

