产 品 规 格 书

SPECIFICATION

Customer(客户）：_____

Part No.（规格型号）：NFP-7C-FS0725

No.（文件编号）：NFP-GC-09-2018061901

Customer Approved 客户确认	Customer’s Part Name （客户部件名）		签章 Signatures	日期 Date
Approved 本司确认	拟制 Drawn	审核 Check	批准 Approved	日期 Date
	刘华	代小丽	杨勇	2018-06-19

网址：www.NFPmotor.com

E-mail: info@nfpmotor.com

2.使用范围/General

本说明书适用于圆筒式永磁直流电机 NFP-7C-FS0725 型.

This specification applies to cylindrical permionot magnetic motors DC model

3 . NFP-7C-FS0725 使用条件/Operating condition

项目/Item		规格/Specification	条件.备注/Condition remark
3-1	额定电压 Rated voltage	5.0VDC	
3-2	使用电压范围 Operating voltage	1.5-5.0VDC	
3-3	额定负荷 Rated load		
3-4	额定转速 Rated speed	16000±15% rpm	
3-5	旋转方向 Rotation	CW/CCW	
3-6	马达位置 Motor position	全方位 All position	
3-7	使用环境 Operating environment	-20-60℃ 10-90%Rh	
3-8	保存环境 Storage environment	-40-+80℃ 5-95%Rh	无水气凝结 No condensation of moisture

4.测定条件/Measuring condition

项目/Item		规格/Specification	条件.备注/Condition remark
4-1	温度 Temperature	20±2℃	
4-2	湿度 Humidity	(60%-70%)Rh	
4-3	位置 Motor positio	轴向 Motor shaft hotizontal	将马达固定在测试验台上 Look the motor in a test fixture

所有的数据都是在温度 20℃,湿度 65%的条件下测得的,判定有异议时,在温度 5-35℃、湿度 45-85%的范围内测试.

All date are based on the measurement mnder the temperature of 20 ℃ and humidity 65%Rh.hower.theranges of temperatue5-35 ℃ and humidity 45-85%Rh are to be applicable as long as no problems.

5.机械要求/Mechanical specification

项目/Item		规格/Specification	条件.备注/Condition remark
5-1	结构 Configuration	见外形图 As specified in outline drawing	外形图(第 6 页)Outline drawing （the 6th page）
5-2	外观 Appearance	不含有机械损坏及充分的浸蚀等 There shall be no evidence of mechainical damage and shall not have inadequate corrosion and so on	目测(允许范围根据样品外形) Vosia examination(allowable extent is bosed on boundary sample)
5-3	轴向间隙 Shaft end play	0.05-0.3mm	
5-4	重量 Weight	3.95g approx	

6..性能特点/Performance and characteristics

项目/Item		规格/Specification	平均值 Average	条件.备注 Condition remark
6-1	额定转速 Rated speed	16000±15%rpm	16450rpm	在额定电压和额定负载（振子）下 .At rated voltage load(vibration weight).
6-2	空载转速 No load speed	/	/	
6-3	额定电流 Rated current	100mA max	88mA	
6-4	空载电流 No load current	/	/	
6-5	堵转电流 Stall current	180mA max	168mA	在额定电压下 At rated voltage
6-6	起动电压 Staring voltage	1.5VDC Max	1.5VDC	在额定负载(振子)下电枢的任意位置.Atrated olad (vibration weight)any position of rotor.
6-7	绝缘电阻 Insulation sesistrnce	＞2MΩ	＞2MΩ	在 100V 直流下,导线和机壳间 At DC 100Vbetween lead wire and case
6-8	端电阻 Terminal resistance	29±20%Ω	29.0Ω	在 20℃下 At20℃
6-9	机械噪声 Mechanial noise	小于 50 分贝 A 计权 50db(A)Max	30 分贝 A 计权 30db(A)	
		在额定电压额定负载(振子)下. At rated voltage and rated load(vibration weight) 背景噪声:50DB(A)max Back Ground uoise 50db(A)Max 将马达固定在测试台上(轴向) Lokc the motor in a test firture(shaft horizontal) 悬挂式 Suspension motbod		

7.可靠性/Reliability

项目/Item		试验条件 Test condition	判定基准 Requirements
7-1	寿命	电压/Voltage:5.0V DC 负荷/Load:R2.5*4.0*0.8 温度/Temperature:20±2℃ 湿度 Humidity:65±5%Rh 测试状态/Test staer 将马达固定在测试台上(轴向) Lock the motor in a test firture (shaft horizontal)	
	6-1-1	试验方式/test mode: 连续运行(顺时针)/contimurs operation(CW) 试验时间/Test time:50h	测试后,马达应符合 7-1 项的要求.After the test motors shall be approved as specified in item7-1.
	6-1-2	试验方针/Testmode 开 8S(顺时针)----停 8S 8sec on (CW)---8sec off 试验次数/Testcyele:10000 次/10000cyeles	
7-2	低温旋转 Low temp Exposure	温度/Temperature:-20±2℃ 时间/Time:96h	在常温下放置 2h 后,马达应符合 7-2 项的要求. After the test motors shall be approved as specified in item 7-2.
7-3	高温放置 High temp Exposure	温度/Temperature:60±2℃ 时间/Time:96h	
7-4	湿度放置 Humidity Exposure	温度/Temperature:40±2℃ 湿度/Humidity:90%-95%Rh 时间/Time:96h 无水气凝结/No condensation of moisture	
7-5	自然落下 Free fall	试验状态/Test state:将马达固定在约 75 克(包括马达本身)的物体上,落向水泥地面. Set the motor to the approximately 75g (include the motor)weight of block drop the motor on the coperete floor. 高度/Height:1.5m 方向/direction: ±x, ±y, ±z 次数/Number of times 每个方向 2 次/Each 2 times	

8.要求/Requirements

项目/Item		判定基准 Requirements
8-1	表 A TableA	1)额定转速/rated speed:不大于初始值±30%Initial data±30%Max 2)额定电流/Fated currect:不大于初始值±30% Initial data±30%Max 3)绝缘电阻/Insalation jesistance :大于 1MΩ 1MΩ Min 4)起动电压/Starting voltage:不大于 1.0V 直流电压 1.0V DC Max
8-2	表 B TableB	1)额定转速/rated speed:不大于初始值±30%Initial data±30%Max 2)额定电流/Fated currect:不大于初始值±30% Initial data±30%Max

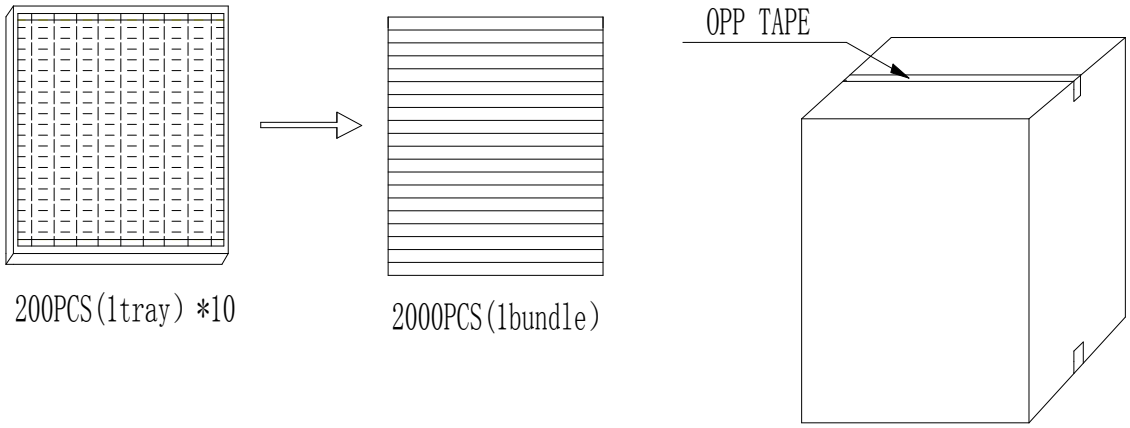
9.包装/Matters needing attention packaging

9-1 电机在运输过程应小心轻放:避免碰撞敲击引起的电机机身和性能受损.
Please lay the motors carefully in transportation to svoid any damage to the motor body or its electric furction because of collision.

9-2 马达应避免高温放置、化学腐蚀,存储时间不超过 6 个月.
Please don’t leave the motors in the envirorricnt of high temperature . high humidity and gas that will cause rust and corrosion Please don’t store the motors for ever 6 months.

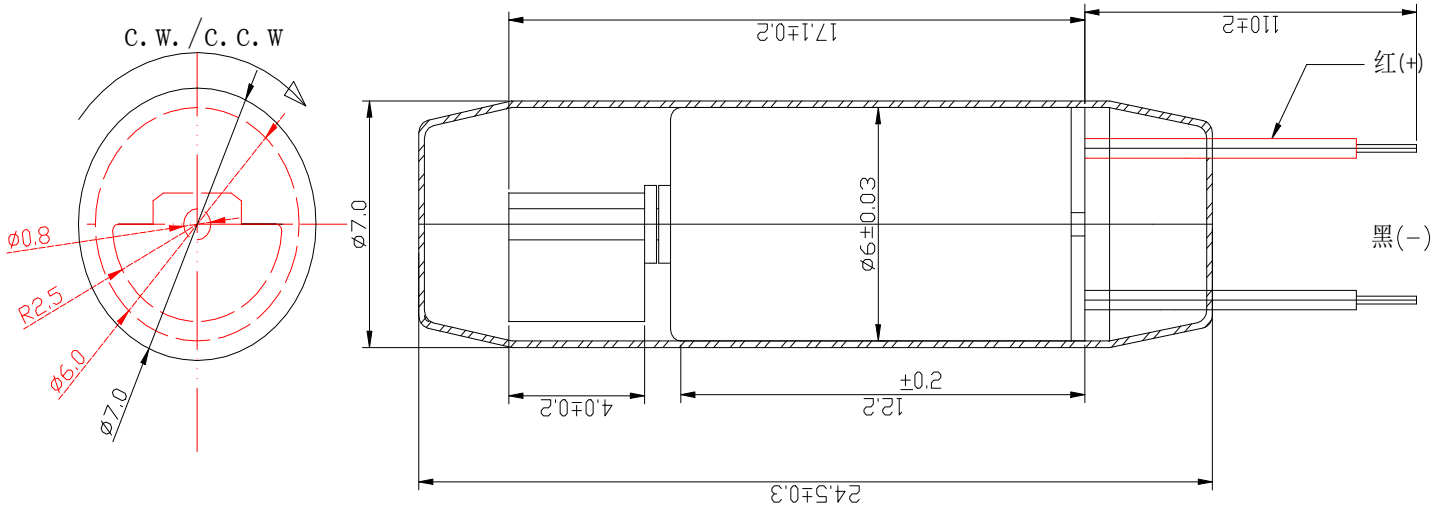
9-3 接电后不要经常性堵住机轴.
Please don’t lock the motor shaft when the electric power is supplied.

9-4 包装 packaging



Remarks:
2000PCS/CTN:25cm×30cm×27cm
包装试验要求
1. 标准
(1) 整箱重量小于等于9kg的，跌落高度设定为75cm.
(2) 整箱重量大于9kg但小于等于23kg的，跌落高度设定为60cm.
2. 试验方法：
跌落要求为六面三棱一角.
(1) 六面: 先从最大两面跌，然后是中间大小的两面，最后跌最小的两面，一共六次。
(2) 三棱: 指任选三条同一角的棱，跌落秩序：最长棱，中间长度，最短的，一共三次。
(3)一角: 指上一步三条棱所组成的角，跌落一次。
3. 判定基准
经过跌落试验后，产品外观、性能无不良。
Package Test Requirement:
1. Criteria
(1) The weight of the whole carton less than 9kg, the dropping height is 75cm.
(2) The weight of the whole carton more than 9kg and less than 23kg, the dropping height is 60cm.
2. Test Methods:
Dropping requirement is 6 faces, 3 arris, 1 angle.
(1) 6 faces: First dropping with two biggest faces, then dropping with another two middle faces, at last dropping with two smallest faces, once per face, total 6 faces.
(2) 3 arris: Choose any 3 arris which make up of the same the angle, the dropping sequence is the longest arris, middle arris, shortest arris. Total 3 times.
(3) 1 angle: Point to the angle which is made up with the 3 arris in the above step. Dropping for 1time.
3. Judgement Criterion
After drop test, no evidence of damage on the appearance and performance.

10.外形图/ Outline drawing



Performance:

1.Rated Voltage：5.0V
2.Rated Current：100mA
3.Rated Speed：16000±15%rpm
4.Stall Current：180mA
5.Start Voltage：1.5V
6.Waterproof level：IP67

		6*12带导线振动电机				材　料	
						设　计	
型号	NFP-7C-FS0725			公　差	±0.05	制　图	
比　例	示意图	图号	KPD2018061902			校　对	
单　位	mm	日　期	2018-06-19	NFP-MOTOR			

11.注意事项 Matters needing attention

11.1、 如有含硅类物质及化合物，易吸附于马达的换向器、电刷或其他部品，经马达中之电能影响，会分解为SiO2、SiC及其他副产品,这些物质都会使换向器与电刷的接触电阻急速增加。因此马达在与含硅类物质及化合物一起使用时，要特别小心造 成马达部件的损伤.尤其在使用含硅类黏胶及密封材料，将马达组入贵公司部品及产品时，请注意查明在使用及硬化时，不 会产生挥发性之雾气，伤害到马达的特性及寿命。在选用氰化物、硫化物的黏胶时，也要特别小心造成马达部件的腐蚀.

If silicon materials, which contain low molecular silicon compound adhere to the motor’s commentator, brush of other parts, then upon rectification of the electric energy the silicon breaks down into SiO2,SiC and other constituents which produce a rapid increase in the contact resistance between the commutator and brush. therefore great care should be taken when silicon material is used in a unit and check well at the same time that such binding agents or sealing materials are not generating gases of detrimental nature, whether used for motor mounting or applied during your product assembles. care must be taken for an optimum selection, especiallywhen using those of cyanic adhesive and sulfur gas.

11.2、 当组装贵公司部品及产品时，请特别注意，勿使任何黏胶接触到马达的轴承，或让黏胶流入马达本体之内。

When mounting your motors by means of binding agents, DON’T flow any adhessice to the Bearings nor intrusion into the motors.

11.3、 经由轴心，轴向压入马达的力量会对马达的寿命有极大的影响，例如滑轮齿轮、风扇页等。在有轴向压力的状况下,马达的寿命应在贵公司部品及产品中实际操作环境下测试而得之数据为准。当轴向压力过大时，应考虑用机械方式固定轴心 Axial thrust on the output shaft could have an adverse effect on the motor life i.e... as is produced by worm gears, fans etc, check the service life expected under the actual operating conditions by testing the motors installed in your application products .for heavy thrust loads consider using something mechanical to retain the shaft end.

11.4、 在某些使用状况，驱动马达所使用的电源供应器之内电阻也会影响马达的寿命。如马达之驱动为低电压之电源,而内电阻过大是会导至马达不能达到预期的效果与特性。相反的情况，如马达之驱动为高电压之电源时,或常切换不同之驱动电压时,内电阻过小时,会使马达的寿命缩短。在周遭温度与一般标准室温有偏差时，尤其是过高或过低温时，请特别注意电源及其内电阻的改变。

There are occasions when the internal resistance of the motor driving power source (which contains an electrical circuit) can influence the life span of the motor. in instances where there is a low input of voltage to the motor, the internal resintance of The Power source is large which may well result in an inferior motor after a short time, conversely in instances where high cyclic voltage are applied, this internal resistance is small and the motor life span is shortened. when the temperature deviates from the normal room temperature as is the case in low and high temperature situations, please note the conditions.

11.5、 当有相当的轴心径向的压力，如轴心上加装偏心轮，或操作环境有相当的震动时，马达的寿命会受到严重的影响。在此情况,马达的寿命必须由实际状况操作的数据为依据。

Motor life may be affected adversely by heavy radial load such as produced by rotating eccentric cams, etc., and also by vibration given from outside. Do check over such negative factors by testing the motors to the actual operating conditions in your application products.

11.6、 如果贵公司装置吾司马达或组立贵司产品时，所用设备、机械会发出超音波时，请特别注意，超音波有可能对马达内部零件造成损害。 If when mounting the motor and assembling the unit, equipment which emits ultrasonic waves is used there is a danger that some of the internal parts of the motor might be damaged so please take care,

11.7、 请勿将马达储存于高温或高湿度的环境。请勿将马达储存于有腐蚀性气体的环境。这些环境都会使马达损坏，无法正常使用。 DON’T store motors under environmental conditions of high temperature and extreme humidity.

DON’T keep them also in an atmosphere where corrosive gas may be present, as it may result in mulfunction.

11.8、 周遭环境及操作温度会对马达的特性与寿命有所影响。请特别留心使用此马达时，周遭可能有的高温或高湿度的环境。

Ambient and operating temperatures exert an affect more or less on motor performance and Do pay particular attention to the surroundings when it is hot and damp

11.9、 如果贵司需要将齿轮、滑轮等零件压入吾司马达的轴心时，请一定要适当的、正确的支撑轴心的另一端或马达的后盖及其凸起。

When press fitting a pulley, gear etc., onto the motor output shaft, always support the shaft from the other end on its retaining metal pad in a proper and correct way.

11.10、 如果贵公司组立贵司产品时，有焊接的工作，请务必将马达上所有的贯穿孔、间隙都覆盖好，不使焊渣、助焊剂、烟雾等有机会进入马达。尤其在焊接马达的连接线或端子时，要特别注意，焊接要尽快完成，否则，线材或端子周遭的塑胶会产生变形。其他预防措施也要尽量完善,以免造成马达的损害。请务必将马达的连接线或端子上残留的助焊剂清除，否则在导电时会有异常状况及损害.

When soldering, BE SURE to finish your work quickly so as not to develop plastic deformation around the motor terminals nor to give them any forced bend or inward depression. in doing deformation- special care must be taken not to allow solder debris and flux to spatter into motors and precaution measures should be taken if necessary, by covering up all the nearby holes and aperaures. Any motors having snap in terminals must also be attended carefully so as not to get flux in along the terminals, as it may cause failure in electrical conduction.

11.11、请务必注意,任何状况下都不可将马达的轴心锁死。当马达轴心锁死时,会产生高热,不但马达本身会损坏,也会使周遭易燃物酿成灾害. DON’T leave motor shaft locked while power is applied, as even a short time lock up may cause excessive heat build up resulting in burning damage to the motor depending on its specifications.