

产 品 规 格 书

(PRODUCT SPECIFICATION)

客 户(CUSTOMER) : 德国 SOL-EXPERT

型 号(MODEL) : RF-300CA-11440

日 期(DATE) : 17-Sep-2014

版本号(EDITION No.) : A

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RF-300CA-11440 PRODUCT STANDARD SPECIFICATI 产品规格书	SHENZHENHUACHUANGSHENGMOTOR CO.,LTD. 深圳市华创升电机有限公司	PAGE
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1. 适用范围:/Scope:

本文规定了由深圳华创升电机有限公司交付的 RF-300CA-11440 永磁直流电动机有关技术要求和实验测试条件与方法。

The document defines the standard specifications and test Conditions for the DC micro motor model RF-300CA-11440 which is to be delivered by HUACHUANGSHENG CO.,LTD.

2. 标准使用条件:/Standard Operating Conditions :

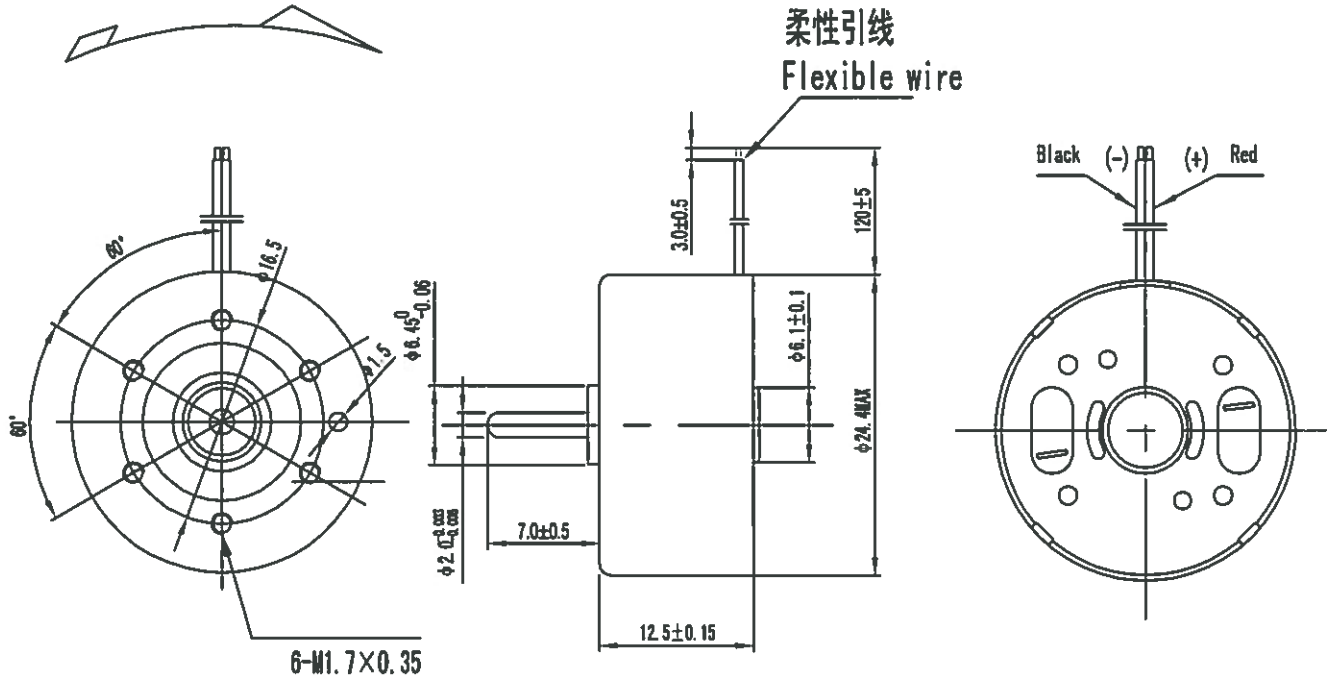
序号/Item NO	项 目/Items	规 格/Specifications
2-1	额定电压/Rated voltage	马达端子间直流电压 2.0V / DC2.0V between motor terminals
2-2	使用电压范围/ Operating Voltage Range	马达端子间直流电压 2.0V~4.0V DC 2.0 V~4.0 V between motor terminals
2-3	额定负载/Rated Load	3.0g·cm 力矩盘负载 /3.0g·cm (by pulley load)
2-4	旋转方向/ Rotating Direction	从出力轴方向看, 顺时针和逆时针, 两方向 Direction CW & CCW when viewed from output shaft side.
2-5	使用温度范围/ Operating Temperature Range	-20°C ~ +70°C 常湿下 /At normal humidity.
2-6	保存温度范围/ Storage Temperature Range	-30°C ~ +80°C 常湿下 /At normal humidity.
2-7	马 达 姿 势 /Operating Position	出力轴全方位/ output shaft all direction

3. 测试条件:/Test Conditions:

序号/Item NO	项 目/Items	测试条件/ Test Conditions
3-1	马达姿势: / Operating Position	检查时, 出力轴水平放置/When inspected ,the shaft is horizontal .
3-2	电源: / Power Source	确保测试无问题的可调直流稳压电源/Regulated DC power supply which assures unquestionable measurement.
3-3	环 境 温 度 和 湿 度 : Temperature & humidity	+10 °C~ +30°C 和 45%~85%RH。如果判断有疑问, 则按 JIS 标准试验条件(+18°C ~ +22°C,60 ~ 70%RH)。In standard test, measurement is to be made at +10°C ~ +30°C and relative humidity 45%~85%RH. If the judgment is questionable, the measurement is to be made based on JIS standard testing condition(+18°C ~ +22°C,60 ~ 70%RH)
3-4	旋转方向/ Rotating Direction	从出力轴方向看为顺时针/CW when viewed from output shaft side.
3-5	外观尺寸/ Dimension	参考马达外形图/ Refer to construction drawing.(见 P2/11)

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旋转方向
Direction Of Rotation



Notes:

- Usable machine screw length 1.0max. from motor mounting surface.
从马达的安装表面可使用螺丝有效长度最大为1.0max.
- Allowable torque for screwing of tapped hole: 2.0kgf-cm max.
安装螺丝的最大扭力为2.0kgf-cm max.
- No remarkable scratches or dents on the surface.
目视马达外观无伤痕状态.
- Tolerances not otherwise specified decimal: $\pm 0.3\text{mm}$.
未注尺寸公差按: ± 0.3

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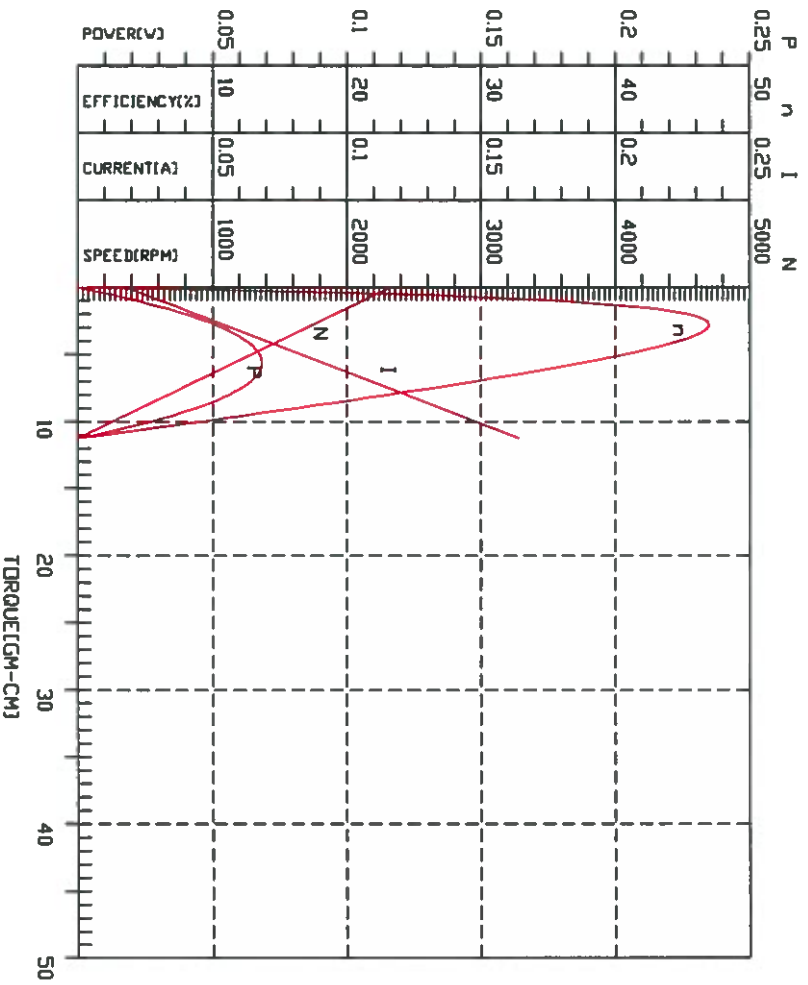
4. 电气性能:/Electrical Characteristics:

序号/Item NO	项 目/Items	测试条件 /Test conditions	规格/Specifications
4-1	额定负荷转速/ Rated Load Speed	额定电压, 额定负载/ At rated voltage and rated load	1700±204r/min
4-2	额定负荷电流/ Rated Load Current	额定电压, 额定负载/ At rated voltage and rated load	70mA 最大/ 70mA max.
4-3	空载转速/ No load Speed	额定电压, 空载/ At rated voltage and no load	2300±276r/min
4-4	空载电流/ No load Current	额定电压, 空载/ At rated voltage and no load	18mA 最大/ 18mA max
4-5	起动力矩 Starting Torque	额定电压, 两点法 0g-cm 和 3g-cm./ At rated voltage and two different load, 0g-cm and 3g-cm	8.0 g-cm (min.)
4-6	起动电压/ Starting Voltage	无负荷/Under no load	0.6 V 最大 0.6V (max.)
4-7	绝缘电阻/ Insulation Resistance	在马达外壳与端子间施加 DC 250 V 电压/ Measured between terminal and frame with 250V DC megger.	10.0 MΩ 最小 10.0 MΩ(min.)
4-8	起动电流/ Starting Current	额定电压, 转子在 2/3R 位置 (R 为一极的 电阻) /At rated voltage, rotor position to be 2/3R.(R means the resistance in one pole)	200mA 最大/ 200mA max.
4-9	电气噪音/ Electrical Noise		已装有噪声抑制元件压敏 电阻器 To be equipped with varistor
4-10	参考特性曲线/ Reference Characteristic Curve		参见附图/(见 P 4/11) See attached drawing

马达特性曲线

MOTOR PERFORMANCE CURVES AND CHARACTERISTICS:

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Rated Voltage: DC 2.0 V

Rated load: 3.0g-cm

PERFORMANCE:

AT NO LOAD:

SPEED : 2354 RPM
 CURRENT : 0.011 AMP

AT STALL:

TORQUE : 11.247 GM.CM
 CURRENT : 0.164 AMP

AT MAXIMUM EFFICIENCY:

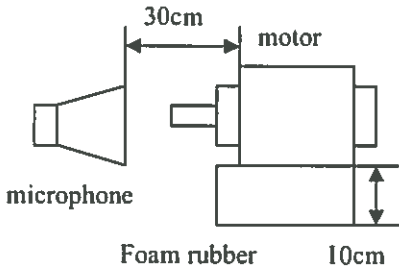
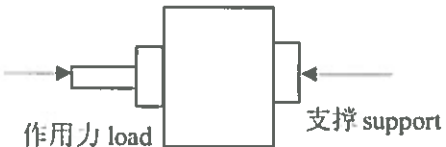
EFFICIENCY : 46.988 %
 SPEED : 1706 RPM
 TORQUE : 2.8 GM.CM
 CURRENT : 0.054 AMP
 OUTPUT : 0.051 WATTS

AT MAXIMUM OUTPUT:

SPEED : 1140 RPM
 TORQUE : 5.6 GM.CM
 CURRENT : 0.090 AMP
 OUTPUT : 0.068 WATTS

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5. 机械性能:/Mechanical & Functional Characteristics:

序号/Item NO	项 目/Items	测试条件/ Test conditions	规格/Specifications
5-1	外观/ External Appearance	目视 / Visual	适合使用 /Appropriate for usage.
5-2	轴伸间隙/ Shaft end play	用百分表测试 / Measured by dial gauge.	0.05 - 0.35 mm
5-3	轴伸径向圆跳动 /Shaft T.I.R	距出力轴末端 5.0mm 处用百分表测试 /5mm from mounting surface by dial gauge.	0.03 mm 最大 /Less than 0.03 mm.
5-4	马达重量 /Weight	天平称量/Measured by scale.	约 20g/ Approx. 20g
5-5	机械噪声/ Mechanical noise	在下列条件时:电机施加额定电压, 空载. 背景 噪声:30 dB (max.) No load, rated voltage, with motor to be set and measured as below. Background noise:30 dB max. 	45dB max. JIS-A(RMS)
5-6	最小轴向力/ Minimum Axial Load	轴向静推力的方向和支持位置如下图所示: Direction of static load and support of load as shown below. 	10 Kg min
5-7	振动 Vibraton	TO be set with mutual agreement 经客户确认同意	

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6. 环境试验:/Environmental Tests:

序号/Item NO	项 目/Items	测试条件/ Test conditions	规格/Specifications
6-1	跌落试验/ Drop test	最小捆包状态的马达,以包装箱的6面分别1回合从30cm高度跌落于10cm厚度的木板上/ Smallest packing dropped on wooden block of 10cm thickness from 30cm height , once for each 6 faces of the packing.	性能应能满足4.1~4.8 & 5.2,5.3,5.5 项中所有要求。 /All of the specifications in Item 4.1~4.8. and 5.2,5.3,5.5 are to be satisfied
6-2	低温储存试验 /Storage Test under low temperature	将马达在-30℃低温环境中放置72H后再在常温常湿环境中放置24H。 Motor exposed to -30℃ for 72 hours and then to normal temperature /humidity for 24 hours before measurement	
6-3	高温储存试验 /Storage Test under high temperature	将马达在+80℃高温环境中放置72H后再在常温常湿环境中放置24H。 Motor exposed to +80℃ for 72 hours and then to normal temperature/humidity for 24 hours before measurement	
6-4	高温高湿储存试验/ Storage Test under high temperature /humidity	将马达在+40℃/90%~95%RH环境中放置72H后再常温常湿环境中放置24H。 Motor exposed to +40℃/90% ~ 95% RH for 72 hours and then to normal temperature/humidity for 24 hours before measurement	

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6. 寿命试验:/Life Test

序号/Item NO	项 目/Items	测试条件/ Test conditions	规格/Specifications
6-1	连续工作试验 /Life test	1.DC2.0V, 3.0gf-cm 2.环境 : 25°C ±5°C/65%±20%RH 3.试验模式: 如下图 4. 预期寿命: 不少于 500 小时 1. DC2.0V, 3.0gf-cm 2. Environment: 25°C ±5°C/65%±20%RH 3. Duty Cycle: As sketched below 4. Life Expectancy: 500hours(min.)	在寿命实验过程中,出现下列情况之一的,被判定为寿命终止 On life test,motor life isjudged to come to end,when under following conditions 1.额定负荷转速相对初始数值变化超±30% 2.额定负荷电流相对初始数值变化超±30% 3.马达有了明显的不正常现象/ 1.Rated load speed varies more than ±30% from the initial . 2.Rated load current varies more than ±30% from the initial . 3.Motor gets apparently recognized to be unusable.

CW
 0V

7.Rejects 拒收

Motors which do not meet with the specifcations mentioned above or which are apparently due to poor workmanship.
 当电机性能不符合上述条件或制造上存在缺陷, 电机被判为不良。

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8. Environment—related substance 环境物质:

The part should not contain any environment—related substance.

马达部品不含有环境有害物质。

The details of use prohibition parts or exclusion items as below:

禁止使用的环境物质如下所示:

(1) Heavy metals

- 1) Cadmium and its compounds(Cd);
- 2) Lead and its compounds(Pb);
- 3) Mercury and its compounds(Hg)
- 4) Hexavalent chromium compounds(Cr+6);

重金属

- 镉及镉化合物
- 铅及铅化合物
- 汞及汞化合物
- 六价铬化合物

(2) Chlorinated organic compounds

- 1) Polychlorinated biphenyls(PCB);
- 2) Polychlorinated naphthalenes(PCN);
- 3) Chlorinated paraffins(CP);
- 4) Other chlorinated organic compounds;

有机氯化物

- 多氯联苯
- 多氯化萘
- 氯化烷烃
- 其他有机氯化物

(3) Brominated organic compounds

- 1) Polybrominated biphenyls(PBB);
- 2) Polybrominated diphenylethers(PBDE);
- 3)Other brominated organic compounds;

有机溴化合物

- 多溴联苯
- 多溴二苯醚
- 其他有机溴化合物

(4) Organic tin compounds

有机锡化合物

(5) Asbestos

石棉

(6) Azo compounds

偶氮化合物

(7) Formaldehyde

甲醇

(8) Polyvinyl chloride(PVC) and PVC blends

聚氯乙烯及聚氯乙烯混合物

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Precautions in using the motor

马达使用注意事项

1. If silicon materials, which contain low molecular silicon compounds, adhere to the motor's commutator, brush or 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 assemblies. Care must be taken for an optimum selection, especially when using those of cyanic adhesive and sulfur gas.

如果马达部品或周边环境和物体含有 Si、S 等微量元素时可能造成换向器与电刷间阻抗增加，即形成氧化物，使之不通电。

2. When mounting your motors by means of binding agents, DON'T allow any adherence to bearings nor intrusion into the motors.

马达安装后不允许有包装粘结到轴承或异物落入马达内。

3. Axial thrust in the output shaft could have an adverse effect on the motors lifetime. 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 shaft end.

当蜗杆，风叶对马达轴有轴向猛推时对马达寿命有影响，应利用其它设施减少对马达轴向推拉力以保证其中量。

4. 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 resistance of the Power source is large which may well result in an inferior motor after a short time, conversely In instances where high cyclic voltages 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.

电源内阻偏大或偏小会导致马达运行不良或寿命减短，另当温度高或低于室温情况下请记录环境温度。

5. 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.

马达寿命在超负荷或非正常使用时所产生的不良结果，我们不以确认。

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6、 If when mounting the motor and assembling the unit,equipment which emits ultrasonic wave is used theris a danger that some of the internal parts of the motor might be damaged so please take care.

请注意马达组装后，设备若发出超声波将对马达内部造成影响。

7、 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 malfunction.

勿将马达储存在高温高湿有腐蚀性气体处。

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

为防止工作环境的温度变化会影响到马达功能或寿命，所以当天气湿热时请特别注意。

9、 When press fitting a pulley, gear etc., onto the motor output shaft, always support the shaft at the other end or its Retaining metal pad in a proper and correct way.

安装滑轮或齿轮时请给马达轴正确方式定位，应将马达轴另一端即端盖轴承室用铁块支撑。

10、 When soldering, BE SURE to finish your work quickly so not to dexelop plastic deformation around the motor terminals nor to give them any forced bend or inward depression. In doing so, special care must and precautionary measures should be taken if necessary, by covering up all the nearby holes and apertures.Any motors having snap —in terminals must also be attended carefully so as not get flux in along the terminals, as it may cause failure in electrical conduction.

实施焊接时，应尽量缩短焊接时间。以防止电机接线端上的塑料件变形、受力弯曲或内向凹陷。实施此类操作时，一定要特别注意，以避免焊渣、焊液等溅到电机上内。必要时应采取预防措施，将附近的所有开口和缝隙都盖住。配备卡扣式接线端子的电机也应当小心处理，以避免焊料顺接线端子流入电机内。焊料溅入电机内，可能会导致传导性故障（译注：断路或短路）。

11、 DON' T leave motor shaft locked while power is applied, as even a short—time lock —up may cause excess heat build up resulting in burning damage to the motor depending on its specifications.

连接有电源的情况下，不得锁定电机轴。即使只锁定很短时间，电机也会产生大量热量；这可能会导致电机烧毁（具体损坏程度与电机的指标有关）。

12、 Intensive pressure on the endbell boss minght cause starting disability of motor. So please take case for motor mounting not to push endbell boss.

If the endbell boss must be pushed, the load should be put on the center of the boss.

Please ask us for the suitable value the load.

强烈的挤压端盖轴承室可能会造成马达无法转动。所以请尽量不要推端盖轴承室。

如果轴承室无法避免要被推压，请将负荷加于轴承室中心位置。

必要时请预先通知我们做上述评估。

13、 Please do not touch motor bearing as otherwise bearing oil will be drawn out, which minght cause bearing noise.

请勿触摸马达轴承，否则轴承油被吸干容易引起噪音。

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- 14、When motor more than three months did not be used for need to note oil for bearing and confirm afresh.
当马达库存超过 3 个月未被使用时需重新给轴承注油并确认。
- 15、Fumigant and its gas may affect motor performance.Then, motors shall not be eposed to fumigant its gas,if fumigation shall be made for packaging material etc.
薰剂及其气体可能会影响马达正常运行。勿将马达暴露在薰剂或其气体中。如包装材料中可能含有薰剂。
- 16、Identification marking drawn on motor housing with dyestuff marker may be blurred or may fade out when rubbing.
马达机壳上的捺印表示可能会慢慢褪色。
- 17、Soldering temperature and time must be 350℃ (max), within 3 seconds.
焊接时烙铁温度不超过 350℃，焊接时间不超过 3 秒。
- 18、When machine material and method are changed,customers will be notified in advance.
当设备、材料和工艺要做变更时，用户将会提前得到通知。
- 19、For more information, please contact us directly or through our sales and representative offices.
若有其他疑问，请直接联系我们或通过我们的销售、客服与我们联系。