

Specification
仕様書

No. 机种名.	FK130-16140
Page. 页数.	1/9
Date. 日期.	2019.3.21

History of altered specification

変更履歴

Date described below is the date on which delivery specifications were issued.
仕样书发行时间。

[illegible]

Specification 仕様书

No. 机种名.	FK130-16140
Page. 页数.	2/9
Date. 日期.	2019.3.21

1. Scope (使用范围)

	Item (项目)	Specification (规格)
1-1	Application range 应用范围	This Specification is applied to the general characteristics of the following D.C motor. 本仕様书里面的基本特性适用于此款直流电机 Article number: FF-130-16140 机种名: FF-130-16140
1-2	Environmental standards 环境标准	This component complies with the regulation stipulated in the check sheet (IS-X-D-001, Form-9), which manages the environmentally hazardous chemicals. 此马达符合规定的监管检查表(IS- x - d - 001,Form-9),管理环境有害化学物质。
1-3	Other 其它	It is assumed that We do a decision extra when doubt occurred about the matter which wasn't mentioned in this specification. 本仕様书未记载的事项, 在别的场合如有疑意, 我们将重新决定.

2. Measurement condition (测试条件)

	Item (项目)	Specification (规格)
2-1	Direction of mounting 安装方向	Horizontal to output shaft direction 输出轴方向水平
2-2	Power source 电源	D. C regulated power source, which has no doubt about the results, shall be used. 确认测量时无疑问的可调节直流稳压电源。
2-3	Temperature, Humidity 环境	Unless otherwise specified, the standard range of atmospheric conditions for making measurements and tests are as follows: Ambient temperature :15℃ to 35℃ Relative humidity :25% to 85 % Air pressure :86kPa to 106 kPa 除非另有规定,标准范围的大气状况进行测量和测试如下: 环境温度 :15℃ to 35℃ 相对湿度 :25% to 85 % 空气压力 :86kPa to 106 kPa If there is any doubt about the results, measurement shall be made within following limits: Ambient temperature : 20℃±1 ℃ Relative humidity : 65%±2% Air pressure : 86kPa to 106kPa) 如果有任何疑问的结果,测量应当在以下范围内: 环境温度e : 20℃±1 ℃ 相对湿度 : 65%±2% 空气压力 : 86kPa to 106kPa
		Approval 承认
		Exam 审查
		Check 检印
		Design 担当
		卢南君
		瞿卫中

Specification 仕様书

No. 机种名.	FK130-16140
Page. 页数.	3/9
Date. 日期.	2019.3.21

3. Performance(性能)

	Item(项目)	Specification(规格)
3-1	Rated voltage 额定电压	6.0 V
3-2	Range of operating voltage 使用电压范围	3.0V ~ 7.0V
3-3	Standard torque 额定负载	20g.cm
3-4	Direction of rotation 旋转方向	CW & CCW
3-5	Range of operating temperature 使用温度范围	-10℃ ~ +60℃
3-6	Range of storage temperature 储存温度范围	-40℃ ~ +85℃
3-7	Direction of motor mounting 电机姿势	Shall be satisfied at any output shaft directions 出力轴所有方向

4. Electrical specification(电气性能)

	Item(项目)	Specification(测试条件)	Condition•others(规格)
4-1	Rotating speed without load 空载转速	At standard voltage, without load 额定电压, 空载条件下	10000±10% r/min
4-2	Current without load 空载电流	At standard voltage, without load 额定电压, 空载条件下	200 mA or less 以下
4-3	Rated load rotating speed 额定负载转速	At rated voltage, and rated torque 额定电压, 额定负载条件下	7800±10% r/min
4-4	Rated load current 额定负载电流	At rated voltage, and rated torque 额定电压, 额定负载条件下	650mA or less 以下
4-5	Starting current 堵转电流	At rated voltage 额定电压条件下	1900 mA or less 以下
4-6	Starting torque 堵转力矩	At rated voltage 额定电压条件下	80g.cm or more 以上
4-7	starting voltage 起动电压	no load 无负载	2.0V or less 以下
4-8	Electrical noise 电气噪音	Motor shall be equipped with varistor 电机已装有噪音抑制元件压敏电阻器	
4-9	Insulation resistance 绝缘电阻	A voltage of 100V DC shall be applied between (A) and (B) after which measurement shall be made. (A): <u>terminal</u> (B): <u>housing</u> 电机端子(A)和机壳(B)之间加100V DC. (A): <u>端子</u> (B): <u>机壳</u>	1.0 MΩ or more 以上
4-10	Enduring voltage 耐压	A voltage of 100 V AC shall be applied for 1 min between (A) and (B) after which measurement shall be made.Trip current: 2mA) (A): <u>terminal</u> (B): <u>housing</u> 电机端子(A)和机壳(B)之间加AC 100V 1分钟, 遮断电流:2mA (A): <u>端子</u> (B): <u>机壳</u>	Without damage 无异常

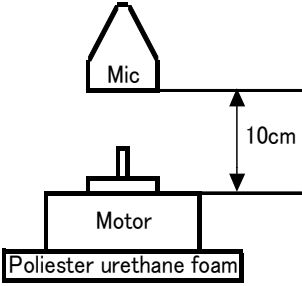
Specification 仕様书

No. 机种名.	FK130-16140
Page. 页数.	4/9
Date. 日期.	2019.3.21

5. Mechanical specification-1/2(机械性-1/2)

	Item(项目)	Specification(测试条件)	Condition•others(规格)
5-1	External appearance 外观	Outer dimensions to be within the tolerances specified in the attached Drawing page 9.No remarkable deformation or superficial defects to be observed by visual check. Fastened parts to be fixed firmly 外形尺寸符合附图 P9外观应无明显变形或表面损伤, 紧固件应安装牢固	
5-2	Radiation Noise 机械噪音	See reference figures on page bottom. At rated voltage Background noise:32db max. 见底页参考图, 在额定电压, 背景噪音最大32db条件下,	70 dB-A 以下 or less
5-3	Shaft end play 轴向间隙	End play for thrust direction of protruded shaft 向轴伸方向拉动出力轴	0.03-0.5mm
5-4	Weight 重量	Reference value 参考值	Approx 25g 约25g

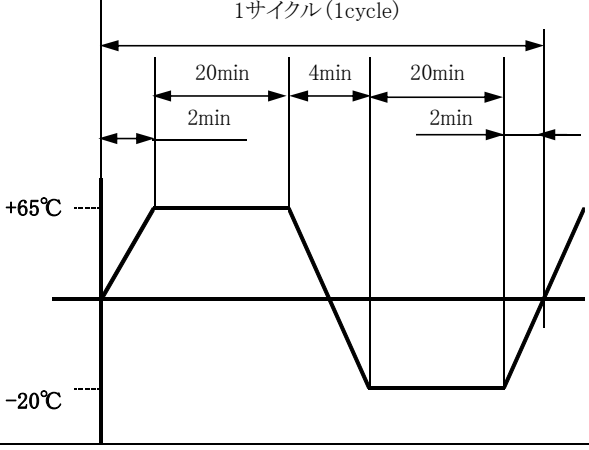
5. Mechanical specification-2/2(机械性能-2/2)

	Fig1. 5-2: Radiation noise measure method 噪音测试方法		
Reference pictures 参考图片	 <p>The diagram illustrates the radiation noise measurement setup. A microphone, labeled 'Mic', is positioned at a distance of 10cm from a motor. The motor is placed on a block of 'Polyester urethane foam'. The entire setup is shown on a horizontal surface.</p>		

Specification
仕様书

No. 机种名.	FK130-16140
Page. 页数.	5/9
Date. 日期.	2019.3.21

6. Endurance characteristics (耐久实验)

	Item(项目)	Specification(实验条件)	Condition•others(规格)
6-1	Change of temperature 冷热冲击实验	<p>The D.C motor shall be subjected to 100 continuous cycles, such as shown in table below.And then it shall be subjected to controlled recovery conditions for 24 hours, after which measurements shall be made.Functional test before and after test.</p> <p>电机在下图条件下100个周期后, 再在常温常湿下放置24个小时, 然后测试其性能.</p>  <p>1サイクル(1cycle)</p> <p>20min 4min 20min</p> <p>2min 2min</p> <p>+65°C</p> <p>-20°C</p>	Electrical and mechanical characteristics shall be satisfied 电气和机械特性应满足要求
6-2	Damp heat 温湿实验	<p>The D.C motor shall be stored at following conditions:</p> <ul style="list-style-type: none">• Temperature:60°C/90%-95%RH for 96 hours• Temperature:-40°C for 48 hours <p>And then it shall be subjected to the controlled recovery conditions for 24 hours. After which measurement shall be made.</p> <p>电机应存储在以下条件:</p> <ul style="list-style-type: none">•温度:60°C/90%-95%RH 放置96小时•温度:-40°C放置48小时 <p>再在常温常湿下放置24小时然后测试其性能.</p>	Electrical and mechanical characteristics shall be satisfied 电气和机械特性应满足要求

Specification 仕様书

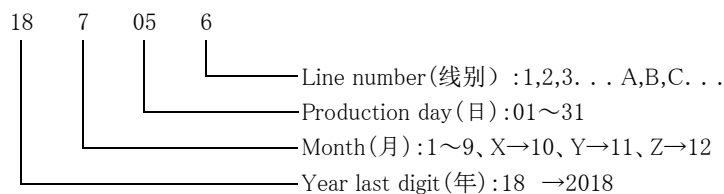
No. 机种名.	FK130-16140
Page. 页数.	6/9
Date. 日期.	2019.3.21

7. Life test (寿命实验)

	Item(项目)	Specification(实验条件)	Condition•others(规格)
7-1	Intermittent mode 运行模式:	连续运行	100H or more 100小时以上
	Test condition: 实验条件: ▪ Environment: Open room ▪ Temperature: 25℃ ▪ Humidity: 50%RH ±20% ▪ Load current: 500mA ▪ Voltage: 6.0V DC (See test mode) ▪ Mounting: Motors should be firmly fixed in the test apparatus 环境: 开放空间 温度: 25℃ 湿度: 50%RH ±20% 负载电流: 500mA 额定电压: DC 6.0V(见实验模式) 安装方法: 马达固定在寿命试验架上		
7-2	Judgment of failure 判为寿命终止条件	1)Rated load speed varies more than ±50% from the initial value 1) 额定负载转速超过初始值的±50%. 2)Rated load current varies more than ±50% from the initial value 2) 额定负载电流超过初始值的±50%. 3)Motor will be unquestionable recognized as unusable 3) 当电机出现异常被确认无疑时.	
7-3	Defective judgment 拒收标准	When one off the above will not be cleared or an imperfection in production will be observed. 当电机性能不符合上述条件或制造上存在缺陷时, 电机被判为不良。	

8. Seal specification (铭牌标示)

FK-130-16140



Specification 仕様书

No. 机种名.	FK130-16140
Page. 页数.	7/9
Date. 日期.	2019.3.21

9. Environment-related substance (环境相关物质) :

The part should not contain any environment-related substance.

马达部品不含有任何的环境有害物质。

The use, prohibition or exclusion of these items are detailed in the following:

禁止使用的环境物质如下所示:

(1) Heavy metals (重金属)

1) Cadmium and its compounds (Cd): <100ppm

1) 镉及其化合物 (Cd): <100ppm

2) Lead and its compounds (Pb): <1000ppm

2) 铅及其化合物 (Pb): <1000ppm

3) Mercury and its compounds (Hg): <1000ppm

3) 汞及其化合物 (Hg): <1000ppm

4) Hexavalent chromium compounds (Cr+6): <1000ppm

4) 六价铬及其化合物 (Cr+6): <1000ppm

(2) Chlorinated organic compounds (有机氯化物)

1) Polychlorinated biphenyls (PCBs): Prohibited

1) 多氯联苯 (PCBs): 禁止含有

2) Polychlorinated terphenyls (PCTs): Prohibited

2) 多氯三联苯 (PCTs): 禁止含有

3) Polychlorinated naphthalenes (PCNs): Prohibited

3) 多氯化萘 (PCNs): 禁止含有

4) Short-chain chlorinated paraffins: <1000ppm

4) 短链氯化石蜡: <1000ppm

(3) Brominated organic compounds (有机溴化合物)

1) Polybrominated biphenyls (PBBs): <1000ppm

1) 多溴联苯 (PBBs): <1000ppm

2) Polybrominated diphenylethers (PBDEs): <1000ppm

2) 多溴二苯醚 (PBDEs): <1000ppm

3) Terabromobisphenol A (TBBP-A): <900ppm

3) 四溴双酚-A (TBBP-A): <900ppm

4) Hexabromocyclododecane (HBCDD): <1000ppm

4) 六溴环十二烷 (HBCDD): <1000ppm

(4) Azo compounds: <30ppm

偶氮化合物: <30ppm

(5) Ozone depleting substances: Not used

破坏臭氧层的物质: 不使用

(6) Asbestos: Not used

石棉: 不使用

(7) Ni and its alloys: $\leq 0.5 \mu\text{g}/\text{cm}^2/\text{week}$ leach rate

镍及其化合物: $\leq 0.5 \mu\text{g-Ni}/\text{cm}^2/\text{周}$

(8) Organic tin: Not used

有机锡化合物: 不使用

(9) Arsenic: Not used

砷及其化合物: 不使用

(10) Perfluorooctane Sulfonates (PFOS): <1000ppm

全氟辛烷磺酰基化合物: <1000ppm

(11) Brominated Flame Retardants: <900ppm

溴类阻燃剂: <900ppm

(12) Formaldehyde: <1000ppm

甲醛: <1000ppm

10. Others (其他)

1) Soldering process (焊接过程)

Soldering temperature: 380°C MAX

焊接时烙铁温度不超过380°C

Soldering time: Within 1 second

焊接时间不超过1秒

2) Changes in machine, material and methods should be notified by the customer in advance.

机器、材料、方法的变化应提前通知客户

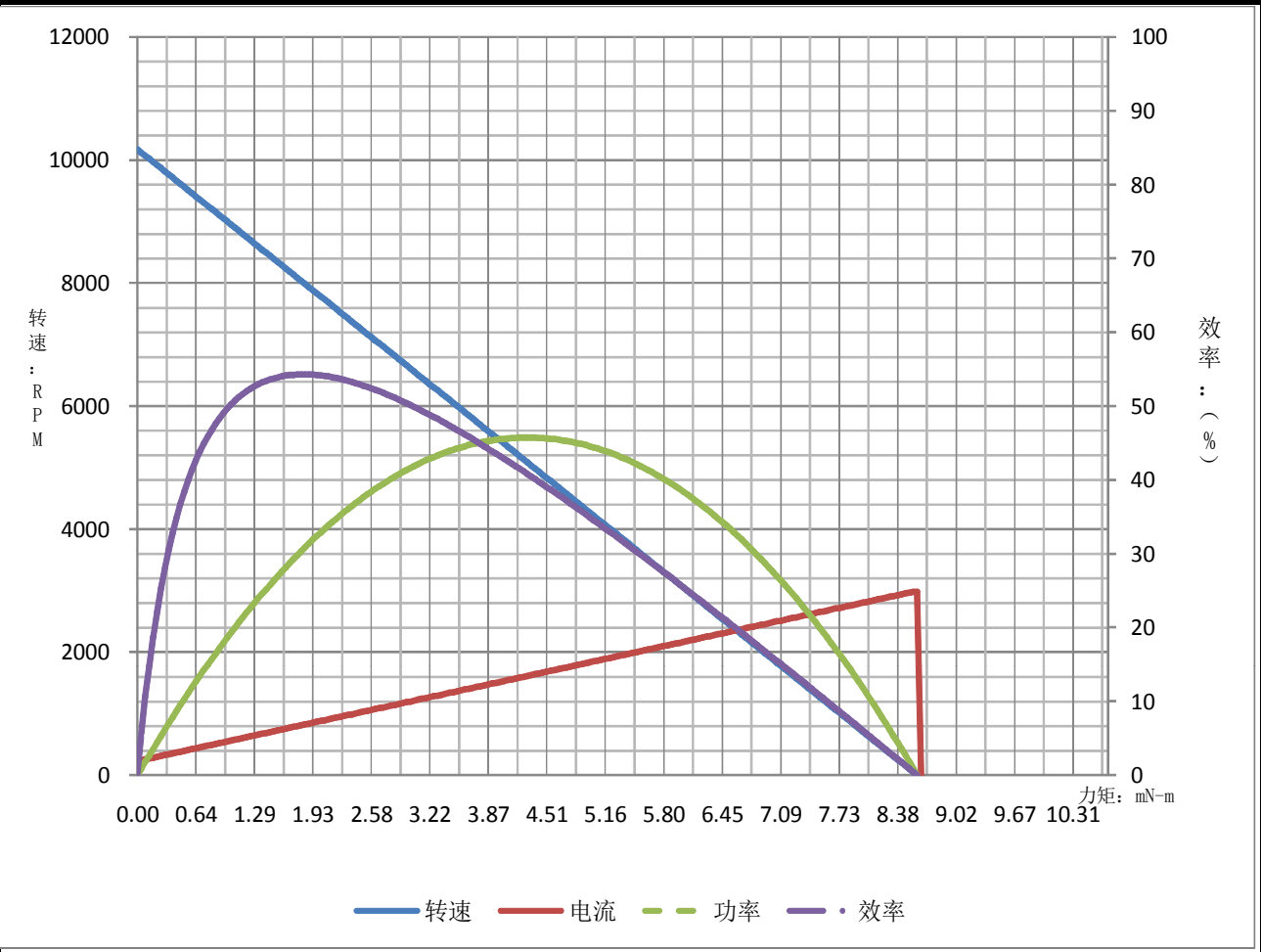
Specification
仕様书

No. 机种名.	FK130-16140
Page. 页数.	8/9
Date. 日期.	2019.3.21

11. Characteristics Curves(特性曲线)

工作令号:
数量:
产品型号: LFK-130-16140

日期: 2019/3/21
全尺寸: 100% Eff
5.0 Watts
7.0 AMP.



性能 (环境温度在25-30℃)

额定电压: 6 Volts

旋转方向: CCW

空载转速: 10172 RPM

堵转力矩: 8.594 mN.m

空载电流: 0.127 AMPS

堵转电流: 1.740 AMPS

最大效率点

最大功率点

效率: 54.3 %

功率: 2.335 Watts

力矩: 1.848 mN.m

力矩: 4.297 mN.m

转速: 7985 RPM

转速: 5086 RPM

电流: 0.474 AMPS

电流: 0.934 AMPS

功率: 1.544 Watts

特征

转矩常数: 4.937 mN-m/AMP

电动势常数 4.937 mV/rad/sec

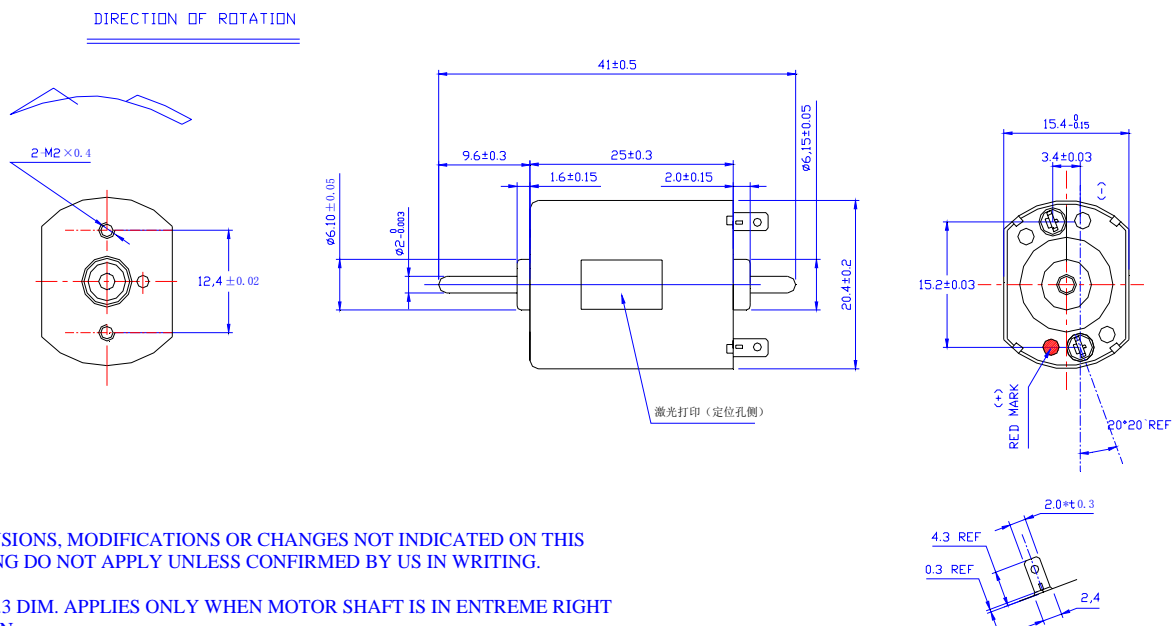
动态电阻: 3.4473 Ohms

电机调节: 1183.67 RPM/mN.m

Specification
仕様書

No. 机种名.	FK130-16140
Page. 页数.	9/9
Date. 日期.	2019.3.21

11. Out line drawing(外形图)



1.DIMENSIONS, MODIFICATIONS OR CHANGES NOT INDICATED ON THIS
DRAWING DO NOT APPLY UNLESS CONFIRMED BY US IN WRITING.

2. 9.6 ± 0.3 DIM. APPLIES ONLY WHEN MOTOR SHAFT IS IN ENTREME RIGHT POSITION.

3. SHAFT END PLAY 0.03-0.50

4.USABLE MACHINE SCREW LENGTH 1.5 MAX. FROM MOTOR MOUNTING.SURFACE.

5.ALLOWABLE TORQUE FOR SCREWING OF TAPPED.
HOLE: 196mN.m(2.0kgf-cm)

6.HOUSE MARK, MOTOR TYPE, DATE TO BE PRINTED ON LABBL.

7.LABEL SHOULD BE PLACED ON AS SHOWN IN DRAWING.

8. $\phi 6.10 \pm 0.05$ DIM. APPLIES TO LARGEST DIAMETER OF BEARING BOSS.

					FK130-16140			
更改标记	数量	更改单号	签名	日期				
设计					马达外形图	等级标记	重量	比例
审核								1:1
工艺								
						第 张	共 张	
标准化 批准								