

混合式步进电机规格书

HYBRID STEPPING MOTOR SPECIFICATIONS

制造商: 上海鸣志电器有限公司
Manufacturer: SHANGHAI MOONS' ELECTRIC CO., LTD.

电机型号 MODEL No.: 17HD4602-07N

客户型号 CUSTOMER'S MODEL No.:

1. 适用范围

本规格书包含了对步进电机的综合要求。

This specification covers the general requirements for the stepping motor

2. 引用文件 APPLICABLE DOCUMENTS

- IEC 60034-1: 旋转电机 第1部分: 定额和性能
- IEC 60034-1: Rotating electrical machines

Part 1: Rating and performance

IEC TS60034-20-1: 旋转电机-第20-1部分: 控制电机-步进电机

IEC TS60034-20-1: Rotating electric machine

Part 20-1: Control motors-Stepping motors

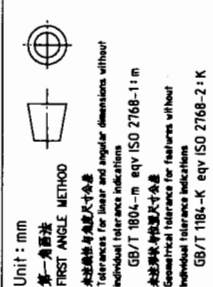
3. 定额 RATING

- 3-1 步距角 Step Angle ----- 1.8°/整步 full step
- 3-2 相数 Number of Phase ----- 4
- 3-3 额定电压 Rated Voltage ----- 3.7V DC
- 3-4 额定电流(微步驱动时的峰值) Rated Current(peak value when microstep) ----- 0.95A
- 3-5 绝缘等级 Insulation Class ----- Class B
- 3-6 驱动电压 Source Voltage ----- 24V DC

表示供电电源施加在驱动回路上的电压。在恒压驱动方式下, 它和额定电压相同。

Indicates the voltage that the power supplier applies to the driver circuit.

It is same as the rated voltage when motor is driven on constant voltage model.



动态性能测试电路

Testing Circuit for Dynamic Performance 4-6, 4-7, 4-8, 4-9.

批准 Approve	7.10.09	备注 Comment:
标准化 Standard	10.10.09	
工艺 Technology	10.10.09	
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设计 Design	08.10.24	
NAMES	SIGNATURE	DATE
董军派		08.10.24

Unit : mm	Unit : mm
第一角画法	第一角画法
FIRST ANGLE METHOD	FIRST ANGLE METHOD
本标准按GB/T 1804-K	本标准按GB/T 1804-K
Individual tolerance indications	Individual tolerance indications
GB/T 1804-K eqv ISO 2768-11 m	GB/T 1804-K eqv ISO 2768-11 m
Geometrical tolerance indications	Geometrical tolerance indications
GB/T 1184-K eqv ISO 2768-2:K	GB/T 1184-K eqv ISO 2768-2:K
UNLESS OTHERWISE SPECIFIED	UNLESS OTHERWISE SPECIFIED
08.10.24	08.10.24
DATE	DATE
原始版本 Original revision	原始版本 Original revision
版本记录 REVISION RECORD	版本记录 REVISION RECORD

- 4-11 绝缘电阻 Insulation resistance ----- 大于 100MΩ More than 100MΩ
 测试条件: 线圈和电机外壳之间, 直流500V.
 Testing condition: Between coils and frame, 500V DC.
- 4-12 介电强度 Dielectric strength ----- 交流500V 50/60Hz 1分钟 / 500V AC 1 minute
 测试条件: 在引线和外壳之间施加交流500V (有效值) 50/60Hz,
 电机可以保持1分钟无击穿. 漏电流小于3mA.
 Testing condition: Motor is capable of withstanding with out break down,
 when 500V AC (RMS value) for period of 1 minute between motor frame and lead wires.
 Cut off current is less than 3mA.
- 4-13 温升 Temperature rise ----- 小于 80°C less than 80°C
 温升是指在一定环境温度条件下, 线圈温度增加的最大值. 绕组温度的测试采用电阻法.
 在恒压驱动模式下, 驱动电压为额定电压, 两相通电, 转速为0pps.
 在恒流驱动模式下, 驱动电流为额定电流, 两相通电, 转速为空载启动频率.
 散热板: 铝板 160 × 160 × t1.6(mm)
 Temperature rise is the maximum coil temperature increase respect to the ambient temperature.
 Coil temperature is measured with resistance method.
 Two phase on rated voltage at 0 pps speed when constant voltage driving model.
 Two phase on rated current at pull in rate speed when constant current driving model.
 Al heat sink plate: 160 × 160 × t1.6(mm)
5. 机械特性 Mechanical Characteristics
- 5-1 外形尺寸 Outline Dimintions ----- 见第3页/ See sheet 3.
- 5-2 转轴材料 Material of shaft ----- 不锈钢 Stainless steel
- 5-3 磁钢材料 Material of magnet ----- 稀土合金 Rare earth alloy
- 5-4 端盖材料 Material of end bell ----- 铸铝合金 Aluminum alloy die casting.
- 5-5 轴承 Bearing ----- 双面防尘盖深沟球轴承 Double shield deep groove ball bearing
- 5-6 铭牌 Label ----- 喷印于后端盖 Ink jet printing on the rear end bell
- 5-7 转子惯量 Rotor Inertia ----- 约 Approximately 38g.cm²
- 5-8 重量 Mass ----- 约 Approximately 200g
- 5-9 转轴轴向位移 End play of the shaft ----- 0.08mm@500g.f
- 5-10 转轴径向位移 Radial play of the shaft ----- 0.02mm@500g.f
6. 应用条件 Application conditions
- 6-1 运行环境条件 Operating environment conditions
- 6-1-1 环境温度 Ambient temperature ----- -20°C ~ +50°C
- 6-1-1 环境湿度 Ambient humidity ----- 15% ~ 85% (无积露/No condensation)
- 6-2 储藏环境条件 Storage environment conditions
- 6-2-1 环境温度 Storage temperature ----- -30°C ~ +70°C
- 6-2-1 环境湿度 Storage humidity ----- 15% ~ 85% (无积露/No condensation)
- 6-3 转轴负载条件 Shaft load condition
- 6-3-1 轴向动态负载 Dynamic axial load ----- 10N Max.
- 6-3-2 径向动态负载 Dynamic radial load ----- 21N Max.
7. 保证和可靠性 Warranty and Reliability
- 7-1 保证: 在产品交货一年内, 由于制造商的错误或疏忽引起的产品问题, 制造商应提供产品的维修或替换.
 Warranty: If failure occurs due to manufacturing defect within one year, the manufacturer shall repair or replace the motor
- 7-2 可靠性 Reliability ----- MTBF 6000小时以上 MTBF 6000 hours or more.
 使用条件: 环境温度 25°C, 使用率 100%, 两相额定电流, 旋转速度整步 1000pps.
 Application condition: Ambient temperature 25°C, Duty cycle 100%, Rated current, two phase on, Speed 1000pps, full step.
8. 注意 Caution:
- 8-1 请勿拎电机的引线或PCB板. Please do not hold motor by PCB or lead wires.
- 8-2 请勿带电插拔电机连接器. Please do not connect/disconnect the motor connector while power on.
- 8-3 请勿朝坚硬物体摔电机, 这种撞击导致的失效在开始阶段可能不会被发现. 但在以后会被发现, 这类不当使用不在我们的质保范围内.
 Please do not drop, hurl or dump motor against hard material. Malfunction may not be observed at early stage after such shock, But it may be found later, This type mishandling voids our warranty.
- 8-4 请注意应用, 因为该电机无任何关于过压、温升、反接以及外部(电磁)噪音的保护电路.
 Please pay attention for handling because this motor has no protection circuits for overvoltage, temperature rise, opposing connection, foreign noise ect.
- 8-5 请勿重新使用拆解过的电机. Please do not use disassembled motor again.

G	批准 Approve	7/10/08	10.27	备注 Comment:
F	标准化 Standard	2008.2.22	2010.08	
E	工艺 Technology	2008.10.24	2010.08	
D	审核 Check	2008.10.24	2010.08	
C	设计 Design	2008.10.24	2010.08	
B	NAMES	SIGNATURE	DATE	Rev. A
A	原始版本 Original revision	08.10.24	17HD4602-07N	SCALE 1:1
REV.	版本记录 REVISION RECORD	DATE	17HD4602-07N	SHEET 2 OF 3

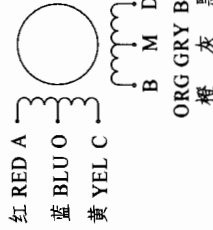
9 连接器针位 vs. 引线颜色

Pin No. vs. Lead wire colour

PIN NO.	颜色 Colour
1	灰 GRY
2	蓝 BLU
3	橙 ORG
4	黑 BLK
5	黄 YEL
6	红 RED

10 接线图

WIRING DIAGRAM



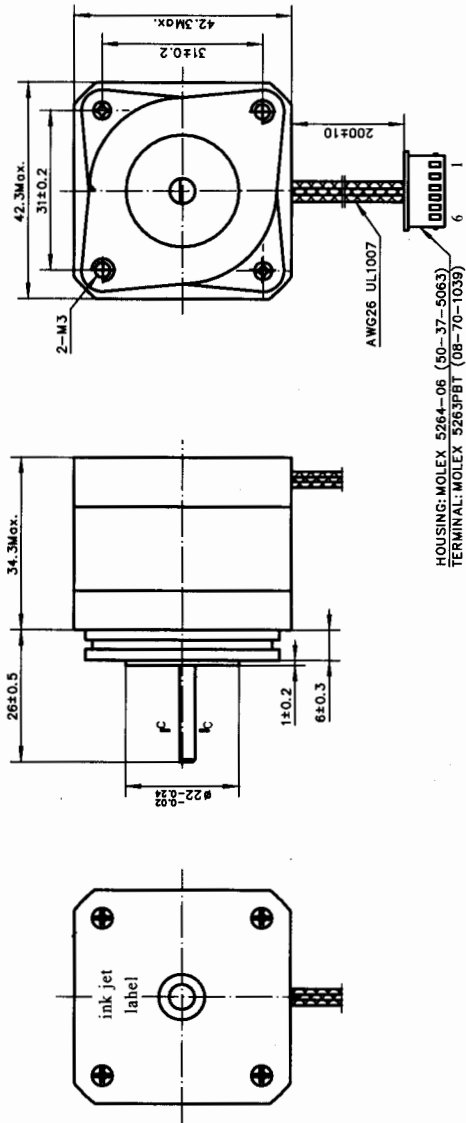
11 励磁顺序 vs. 旋转方向

Exciting Sequence vs. Direction of rotation

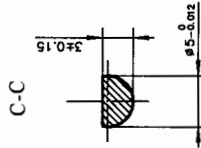
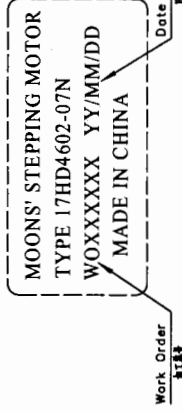
STEP	A	B	C	D	O	M	CCW
1	-	-	-	+	+	+	↑
2	-	-	-	+	+	+	↑
3	-	-	-	+	+	+	↑
4	-	-	-	+	+	+	↑

以两相通电为例
Case by two phase on

Exciting sequence as the table specified will produce clockwise rotation when viewed from mounting end.



铭牌 Label Detail



备注 Comment:

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工艺 Technology	10.07	10.07
审核 Check	10.07	10.07
设计 Design	10.07	10.07

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Individual tolerance indications	GB/T 1804-K eqv ISO 2768-2-K	
Individual tolerance for features without dimensional tolerances	GB/T 1804-K eqv ISO 2768-2-K	

REV.	原稿版本 Original revision	版本记录 REVISION RECORD	DATE	UNLESS OTHERWISE SPECIFIED	NAMES	SIGNATURE	DATE	Rev.A	SCALE 1:1	SHEET 3 OF 3
1	08.10.24				董军派	董军派	08.10.24	7	8	8