

4611110013802

HYBRID STEPPING MOTOR
SPECIFICATIONS

Manufacturer: SHANGHAI MOONS' ELECTRIC CO., LTD.

ML23HS4L4250-01

CUSTOMER'S MODEL No.: 711060525 

1. SCOPE

This specification covers the general requirements for the stepping motor

2. APPLICABLE DOCUMENTS

IEC 60034-1: IEC 60034-1: Rotating
electrical machines

Part 1: Rating and performance

IEC TS60034-20-1: Rotating electric machine

Part 20-1: Control motors-Stepping motors

3. RATING

3-1 Step Angle — 1.8° /full step

3-2 Number of Phase — 2

3-3 Rated Voltage — 3.075V DC

3-4 Rated Current (peak value when microstep) — 2.5A

3-5 Insulation Class — Class B

3-6 Source Voltage — 36V-DC 

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.

4. ELECTRICAL CHARACTERISTICS

4-1 Coil Resistance/phase — $1.23\Omega \pm 10\%$ (20° C)4-2 Coil Inductance/phase — $3.2\text{mH} \pm 20\%$ (1kHz 1V rms)

4-3 Holding torque — 0.9 N.m Min two phase on/rated current)

4-4 Detent torque — Approximate 32mN.m

4-5 Step angle accuracy — $\pm 5\%$  36V 1pps PV7300

Testing condition: Constant current driver/36V/Two phase on/Rated current/Speed: 1pps (Full step)

Ono sokki: PV7300

4-6 Slew rate with no load — N/A 

Testing condition: Source Voltage 36V/Half step

4-7 Pull-in rate with no load — N/A 

Testing condition: Source Voltage 36V/Half step

4-8 Pull out torque — N/A

Testing condition: Source Voltage 36V/Rated Current/Half step

⑩1000pps — N/A

⑩2000pps — N/A

⑩3000pps — N/A

4-9 Pull in torque — N/A

Testing condition: Source Voltage 36V/Half step

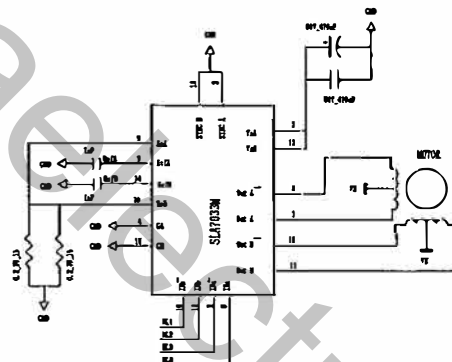
⑩600pps — N/A

⑩900pps — N/A

4-10 Back ElectroMotive Force — N/A

Testing condition: The back EMF is the RMS value measured across the coils,

carrying the motor shaft at the constant speed of 300 RPM.



Unit: mm

第一角画法
FIRST ANGLE METHOD未注线性与角度尺寸公差
Tolerances for linear and angular dimensions without
individual tolerance indications

GB/T 1804-2000 eqv ISO 2768-1:2000

未注厚度与位置尺寸公差
Geometrical tolerances for thickness without
individual tolerance indications

GB/T 1184-2008 eqv ISO 2768-2:2008

UNLESS OTHERWISE SPECIFIED

批准 Approve

标准化 Standard

工艺 Technology

审核 Check

设计 Design

NAMES

SIGNATURE

DATE

备注 Comment:

Use black end caps/采用黑帽



C1	EC:C21-546,共1处 	2021.06.22
C0	驱动电压24V 	2015.09.02
B0 	3号位对应绿色线, 4号位对应红色线, 6号位对应蓝色线。	2015.07.24
A0	原始版本 Original revision	2015.05.08
REV.	版本记录 REVISION RECORD	DATE

批准 Approve	张景	6.30
标准化 Standard	张	6.23
工艺 Technology	张	6.30
审核 Check	张	6.20
设计 Design	瞿建强	2021.06.22
NAMES	SIGNATURE	DATE

ML23HS4L4250-01	Rev. C1	SCALE 1:1	SHEET 1 OF 3
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4611110013802

4-11 Insulation resistance ——— 100MΩ More than 100MΩ

Testing condition: Between coils and frame, 500V DC.

4-12 Dielectric strength ——— 500V 50/60Hz 1分钟 / 500V AC 1 minute —

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 Temperature rise ——— 小于80° C less than 80° C

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. Mechanical Characteristics

5-1 Outline Dimentions ——— / See sheet 3.

5-2 Material of shaft ——— Stainless steel

5-3 Material of magnet ——— Rare earth alloy

5-4 Material of end bell ——— Aluminum alloy die casting

5-5 Bearing ——— Double shield deep groove ball bearing 5-6 Label ——— Pasted
on the rear end cap.5-7 Rotor Inertia ——— Approximately 135g.cm²

5-8 Mass ——— 约 Approximate 460g

5-9 End play of the shaft ——— 0.08mm@500gf

5-10 Radial play of the shaft ——— 0.02mm@500gf

6. Application conditions

6-1 Operating environment conditions

6-1-1 Ambient temperature ——— -20° C ~ +50° C

6-1-1 Ambient humidity ——— 15% ——— ~ 85% /No condensation)

6-2 Storage envirenment conditions

6-2-1 Storage temperature ——— -30° C ~ +70° C

6-2-1 Storage humidity ——— 15% ~ 85% (/No condensation)

6-3 Shaft load condition

6-3-1 Dynamic axial load ——— 15N Max.

6-3-2 Dynamic radial load ——— 75N Max.

7. Warranty and Reliability

Warranty: If failure occurs due to manufacturing defect within one year,
the manufacturer shall repair or replace the motor

7-2 Reliability ——— MTBF 6000小时 MTBF 6000 hours or more.

25° C, 使用率100%, 000pps. Application condition: Ambient temperature 25° C,

Duty cycle 100%, Rated current,

two phase on, Speed 1000pps, full step.

8. Caution:

8-1 Please do not hold motor by PCB or lead wires.

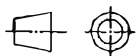
8-2 Please do not connect/disconnect the motor connector while power on.

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 Please pay attention for handling because this motor has no protection circuits for
overvoltage, temperature rise, opposing connection, foreign noise ect.

8-5 Please do not use disassembled motor again.

Unit: mm

第一角画法
FIRST ANGLE METHOD未注线性与角度尺寸公差
Tolerances for linear and angular dimensions withoutIndividual tolerance indications
GB/T 1804-2000 eqv ISO 2768-1:2000未注形状与位置尺寸公差
Geometrical tolerances for features without
Individual tolerance indications
GB/T 1184-2008 eqv ISO 2768-2:2006

UNLESS OTHERWISE SPECIFIED

批准 Approve

标准化 Standard

工艺 Technology

审核 Check

设计 Design

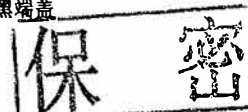
NAMES

SIGNATURE

DATE

备注 Comment:

Use black end caps/采用黑端盖



ML23HS4L4250-01

Rev. C1

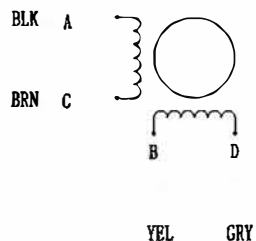
SCALE 1:1

SHEET 2 OF 3

4611110013802

9.

Wiring Diagram



Exciting Sequence vs. Direction of Rotation

STEP	A	B	C	D	
1	+	+	-	-	CCW
2	-	+	+	-	
3	-	-	+	+	
4	+	-	-	+	CW

Clockwise view from mounting side

Label Detail

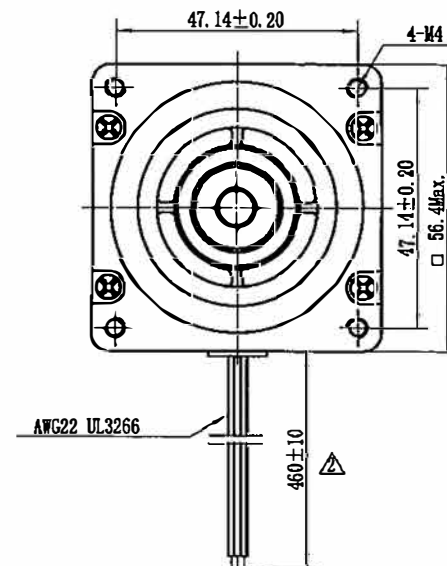
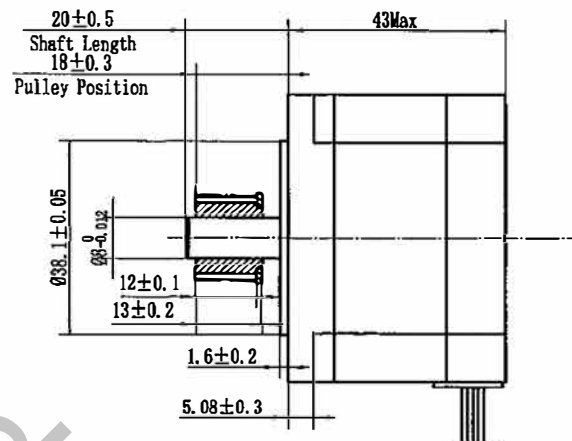
MOONS' STEPPING MOTOR
TYPE ML23HS4L4250-01
P/N:711060525
XXXXXXXX YY/MM/DD

Work Order

Date Format

Pulley Specification

Profile	S3M
Number of teeth	18
Pitch	3
Pitch diameter	Ø17.19
Outside diameter	Ø16.43 ^{+0.06} ₀
Material	HPb59-1



REV.	版本记录 REVISION RECORD	DATE	UNLESS OTHERWISE SPECIFIED	NAMES	SIGNATURE	DATE	ML23HS4L4250-01	Rev. C1	SCALE 1:1	SHEET 3 OF 3
C1	EC:C21-546,共1处	2021.06.22	Unit: mm 第一角画法 FIRST ANGLE METHOD 未注线性与角度尺寸公差 Tolerances for linear and angular dimensions without individual tolerance indications GB/T 1804-m eqv ISO 2768-1: m	批准 Approve	6.30	6.23	6.30	备注 Comment: Use black end caps/采用黑端盖	保	密
C0	更改线束长度,去掉号网管,去掉连接器改为光线,去掉连接器针位引线颜色表	2015.09.02	未注形状与位置尺寸公差 Geometrical tolerances for features without individual tolerance indications GB/T 1184-K eqv ISO 2768-2: K	标准化 Standard	6.23	6.30	6.30			
B0	3号位对应绿色线,4号位对应红色线,6号位对应蓝色线。	2015.07.24		工艺 Technology	6.30	6.30	6.30			
A0	原始版本 Original revision	2015.05.08		审核 Check						
				设计 Design		2021.06.22				