

# MOONS'

## STEPPING MOTOR SPECIFICATION

MOONS' MODEL

42PM096L8-00301 

4611120001802

| REV | DESCRIPTION                                                                                                          | DATE       |
|-----|----------------------------------------------------------------------------------------------------------------------|------------|
| A   | FIRST ISSUED                                                                                                         | 2016.11.28 |
| B   | Cover and P/N changed               | 2019.04.15 |
| C   | Electrical characteristics changed  | 2019.05.30 |
|     |                                                                                                                      |            |
|     |                                                                                                                      |            |
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|     |                                                                                                                      |            |

**SHANGHAI MOONS' ELECTRIC CO., LTD.**

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### 1. RATED CHARACTERISTICS AND CONDITIONS

| NO. | ITEM              | SPECIFICATION     | REMARK           |
|-----|-------------------|-------------------|------------------|
| 1.1 | Rated Voltage     | 24 V DC           |                  |
| 1.2 | Constant Current  | 0.85 A/Phase      | Chopper Drive IC |
| 1.3 | Phase Number      | Two (2)           | Phases A&B       |
| 1.4 | Step Angle        | 3.75°             | Full-Step        |
| 1.5 | Excitation Method | Bipolar Full-Step |                  |
| 1.6 | Insulation Class  | Class B           |                  |
|     |                   |                   |                  |
|     |                   |                   |                  |

### 2. ELECTRICAL CHARACTERISTICS

| NO.  | ITEM                    | SPECIFICATION          | REMARK                  |
|------|-------------------------|------------------------|-------------------------|
| 2.1  | Resistance per Phase    | 3.1 $\Omega$ $\pm$ 10% | @ 25°C                  |
| 2.2  | Inductance per Phase    | 5.5 mH $\pm$ 20%       | 1 kHz 1V rms            |
| 2.3  | Holding Torque          | 800gcm min.            | Two-Phase On            |
| 2.4  | Detent Torque           | 120gcm max.            |                         |
| 2.5  | Dynamic Pull-in Torque  | 560gcm min.            | 500 pps Full-Step       |
| 2.6  | Dynamic Pull-out Torque | 550gcm min.            | 800 pps Full-Step       |
| 2.7  | Pull-in Pulse Rate      | 1100 pps min.          | No Load Full-Step       |
| 2.8  | Step Angle Accuracy     | 3.75° $\pm$ 7%         | @1 pps Full-Step        |
| 2.9  | Insulation Resistance   | 100 M $\Omega$ min.    | Case-lead DC500V        |
| 2.10 | Dielectric Strength     | Leak Current 3mA max.  | Case-lead AC600V 1 sec. |
| 2.11 | Temperature Rise        | 80K max. Two phase on  | On 126x126x2T Plate     |
| 2.12 | Direction of Rotation   | CW & CCW               | Seen from Flange Side   |
|      |                         |                        |                         |
|      |                         |                        |                         |
|      |                         |                        |                         |

### 3. MECHANICAL CHARACTERISTICS

| NO. | ITEM                 | SPECIFICATION                     | REMARK |
|-----|----------------------|-----------------------------------|--------|
| 3.1 | Radial Shaft Loading | 7.5N Max.                         |        |
| 3.2 | Axial Shaft Loading  | 1N Max.                           |        |
| 3.3 | Radial Shaft Play    | 0.05 mm Max.                      | @500g  |
| 3.4 | Axial Shaft Play     | 0.6 mm Max.                       | @500g  |
| 3.5 | Mass                 | Approximate 120g                  |        |
| 3.6 | Rotor Inertia        | Approximate 11.57gcm <sup>2</sup> |        |

### 4. OPERATING CONDITIONS

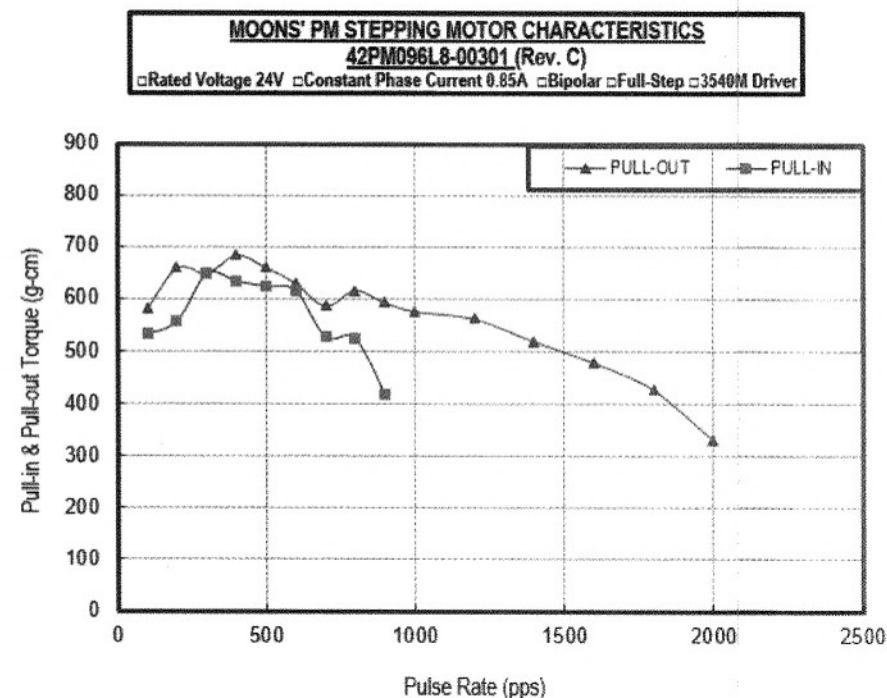
| NO. | ITEM                | SPECIFICATION | REMARK          |
|-----|---------------------|---------------|-----------------|
| 4.1 | Ambient Temperature | -20°C ~ +50°C |                 |
| 4.2 | Ambient Humidity    | 15% ~85% RH   | No Condensation |
| 4.3 | Storage Temperature | -30°C ~ +70°C |                 |
| 4.4 | Storage Humidity    | 15% ~ 85% RH  | No Condensation |

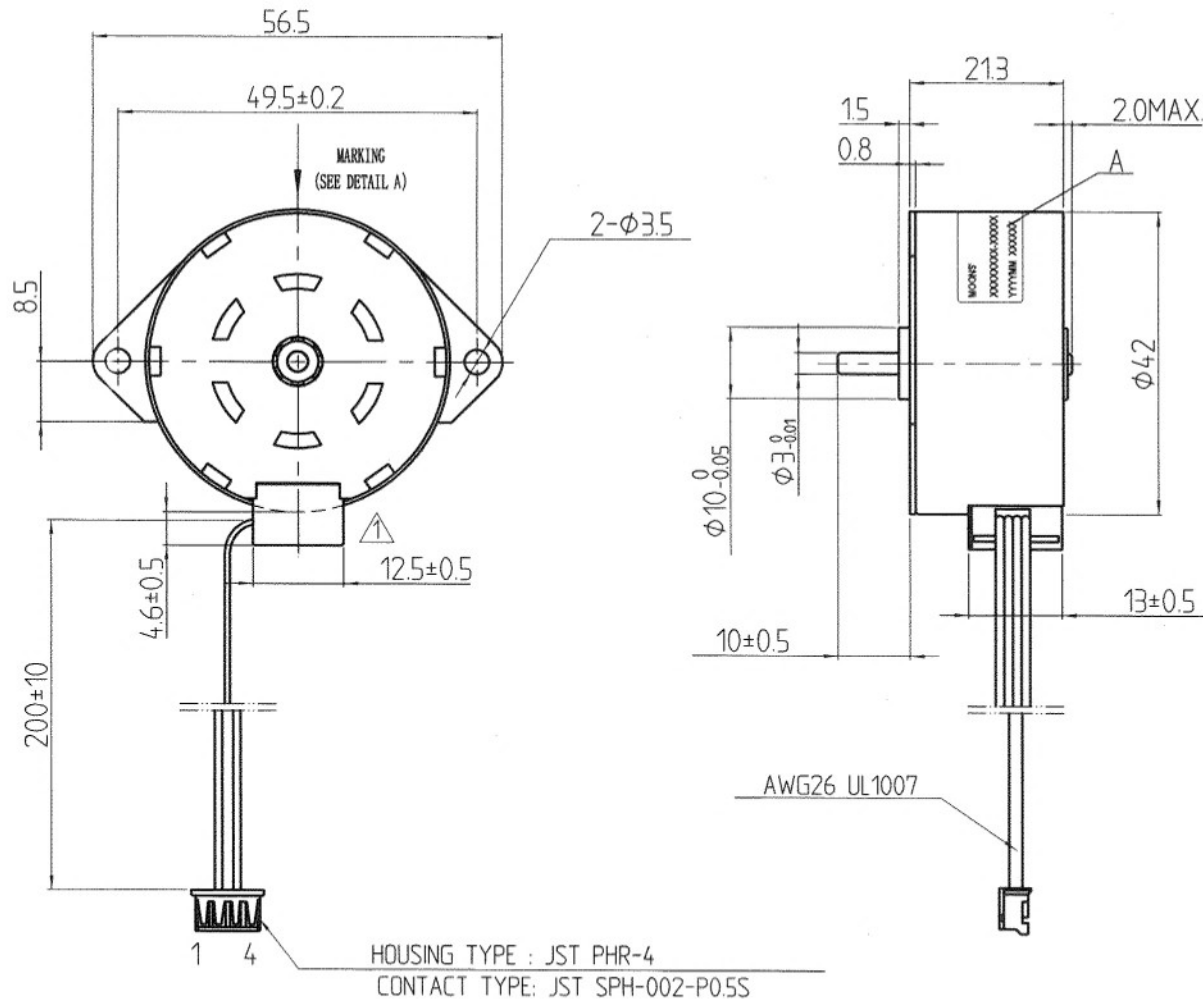
### 5. RELIABILITY AND WARRANTY

| NO. | SPECIFICATION                                        | REMARKS                                                                                                                                                                                                                                                                       |
|-----|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.1 | 3,000 Hours min.                                     | <ol style="list-style-type: none"> <li>1. Normal Operating Conditions</li> <li>2. Full-Step @600RPM ,Rated voltage, rated current and rated load</li> <li>3. No Unusual Vibration &amp; Noise</li> <li>4. Satisfactory Electrical &amp; Mechanical Characteristics</li> </ol> |
| 5.2 | Satisfactory Electrical & Mechanical Characteristics | <ol style="list-style-type: none"> <li>1. Vibration Test at Motor</li> <li>2. 0 ~ 100 Hz Sweep for 5 Minutes</li> <li>3. 1.5 mm, 3 Directional Amplitude for 30 Minutes</li> </ol>                                                                                            |
| 5.3 | Satisfactory Electrical & Mechanical Characteristics | <ol style="list-style-type: none"> <li>1. Shock Test at Package</li> <li>2. 30 G, 3 Directions each for 1 time</li> </ol>                                                                                                                                                     |
| 5.4 | Repair or Replacement within One Year                | <ol style="list-style-type: none"> <li>1. Upon Delivery of the Motor</li> <li>2. If Failure Occurs due to Manufacturing Defect</li> </ol>                                                                                                                                     |

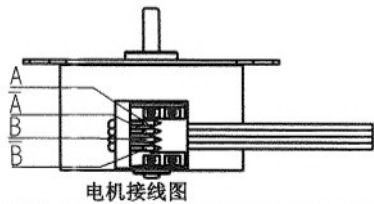
### 6. REMARKS

|     |                                                                                                             |
|-----|-------------------------------------------------------------------------------------------------------------|
| 6.1 | An abnormal operation may extremely shorten the performance or service life.                                |
| 6.2 | Do not hold the motor by lead wire or PCB.                                                                  |
| 6.3 | The motor is subject to change for improving the performance within the range satisfying its specification. |





| CONNECTOR PIN LOCATION |        |                                       |    |    |    |           |
|------------------------|--------|---------------------------------------|----|----|----|-----------|
| PIN NO.                | COLOR  | CCW ← → CW<br>(SEEN FROM FLANGE SIDE) |    |    |    | PHASE     |
| 1                      | BLACK  | ON                                    |    |    | ON | A         |
| 2                      | BROWN  |                                       | ON | ON |    | $\bar{A}$ |
| 3                      | ORANGE | ON                                    | ON |    | ON | B         |
| 4                      | YELLOW |                                       |    | ON | ON | $\bar{B}$ |



电机接线图

备注 Remarks

Rev.

更改记录 Record for Changing

Date

单位 Unit: 毫米 mm 比例 Scale: 1:1

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

未注形状与位置尺寸公差  
Geometrical tolerance for features without  
individual tolerance indications  
GB/T 1184-K eqv ISO 2768-2:K

Approve

Standard

Technology

Check

Design

TYPE 42PM096L8-00301