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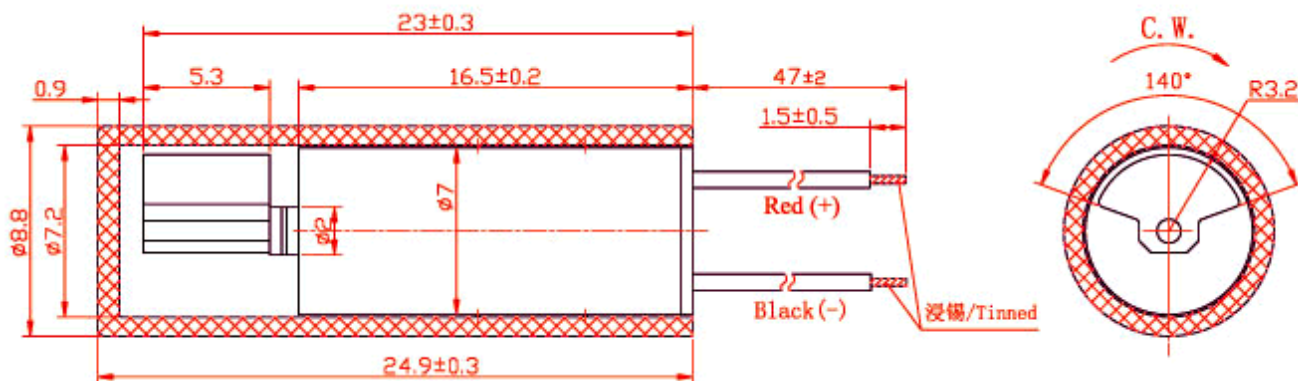
KOTL JinLong Machinery

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Part No. **Z7 AL2 B1 69 20 82**

Technic requirement

1. Rated voltage:3.0V
2. Rated current:250mA Max
3. Rated speed:12000 ± 2500rpm
4. Stall current:680mA Max
5. Terminal resistance:5.5Ω(±20%)
6. Starting voltage:1.7V Max
7. Shaft end play:0.1~0.3mm
8. Lead spec: AWG30 UL1571
9. Overall length is measured after counterweight being pressed against body in direction A. (Shaft end play is not included.)
10. Unmarked tolerance: ± 0.1mm



1. General scope

1-1 This specification applies to cylindrical permanent magnetic DC vibration motor model **Z7 AL2 B1 69 20 82**.

2. Operating conditions

Items	Specifications	Condition & Remarks
2-1	Rated voltage	3.0V DC
2-2	Rated load	Counter weight As specified in 10. Outline drawing.
2-3	Rotation	C.W/C.C.W (clockwise or counter clockwise)

2-4	Motor position	All positions	
2-5	Operating voltage	2.2 ~ 3.6V DC	
2-6	Operating conditions	-30 ~ 70°C, ordinary humidity Humidity : 65±20% RH	No condensation of moisture.
2-7	Storage conditions	-40 ~ 80°C, ordinary humidity Humidity : 65±20% RH	No condensation of moisture.

3. Measuring conditions

Items		Specifications	Condition & Remarks
3-1	Temperature	20±2°C	
3-2	Humidity	(63 ~ 67%) RH	
3-3	Motor position	Motor Shaft horizontal	Lock the motor in a test fixture.

3-4 All data are based on the measurement under the temperature of 20 °C and humidity 65 % RH. However, the ranges of temperature 5~35 °C and humidity 45~85 % RH are to be applicable as long as no problems.

4. Mechanical specifications

Items		Specifications	Condition & Remarks
4-1	Configuration	As specified in 10. Outline drawing	Outline drawing No: Z7AL2B1692082 .
4-2	Appearance	There shall be no evidence of mechanical damage and shall not have inadequate corrosion and so on	Visual examination (allowable extent is based on boundary sample)
4-3	Shaft end play	0.1 ~ 0.3mm	
4-4	Holding strength of vibration weight	49N (5kgf) min.	

5. Performance and characteristics

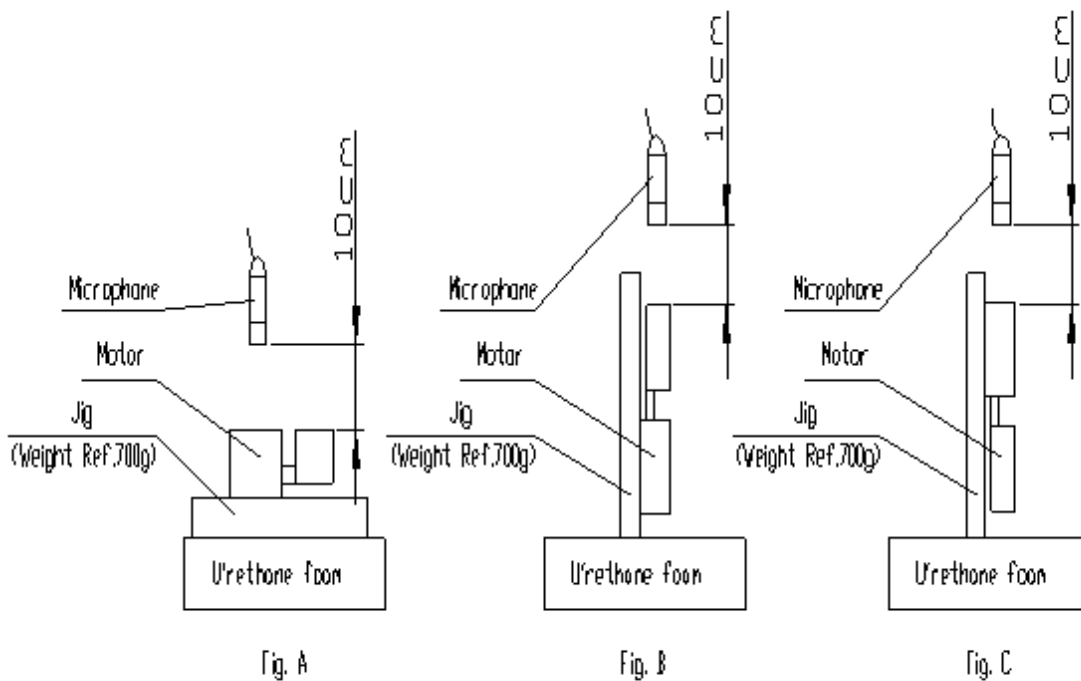
Items		Specifications	Condition & Remarks
5-1	Rated speed	12,000±2,500rpm	At rated voltage and rated load (Counterweight).
5-2	Rated current	250mA max	
5-3	Stall current	680mA max	
5-4	Starting voltage	1.7V DC max	(Counterweight) any position of rotor.
5-5	Insulation resistance	1M• min	At DC 100V between terminal and case.
5-6	Terminal resistance	5.5• approx. (±20%)	At 20°C.
	Mechanical noise	50db (A) max	

Measured at rated voltage and rated load (counterweight).

Background noise: 28db (A) max. @ 10cm.

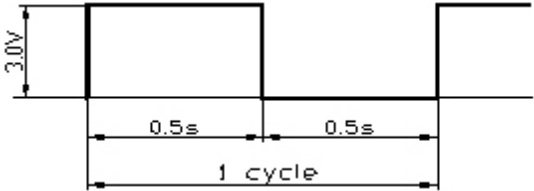
Measuring instruments: B & K.

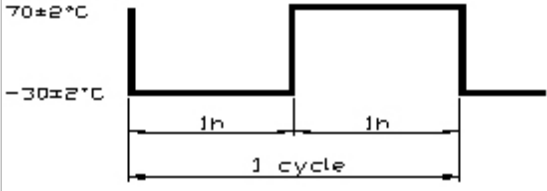
The weight of jig: 700g.



5-7

6. Reliability Test

Items		Standard test conditions	Condition & Remarks												
6-1	Life test	 <table border="1" data-bbox="337 1495 1258 1564"> <thead> <tr> <th>Position</th> <th>Voltage</th> <th>Load</th> <th>Temperature</th> <th>Humidity</th> <th>Life</th> </tr> </thead> <tbody> <tr> <td>Horizontal</td> <td>Rated</td> <td>weight</td> <td>20 °C</td> <td>65 %</td> <td>200,000 cycles</td> </tr> </tbody> </table>	Position	Voltage	Load	Temperature	Humidity	Life	Horizontal	Rated	weight	20 °C	65 %	200,000 cycles	After 2 hours exposure in ordinary temperature and humidity, Motors shall be approved as specified in item 7-1.
Position	Voltage	Load	Temperature	Humidity	Life										
Horizontal	Rated	weight	20 °C	65 %	200,000 cycles										
6-2	Low Temp exposure	Temperature: $-40 \pm 2^{\circ}\text{C}$ Time: 96hrs	After 2 hours exposure in ordinary temperature and humidity, Motors shall be approved as specified in item 7-2.												
6-3	High Temp exposure	Temperature: $60 \pm 2^{\circ}\text{C}$ Time: 96hrs													

6-4	Humidity exposure	<p>Temperature: $40 \pm 2^{\circ}\text{C}$ Humidity: 90 ~ 95% RH Exposure time: 96hrs No condensation of moisture</p>	
6-5	Vibration	<p>Displacement: 1.5mm (p-p) Frequency: 10 ~ 55Hz Acceleration: 22m/s² Period: 20 Mins log sweep (10 ~ 55 ~ 10Hz) Direction: x, y, z Time: Every 2 hours</p>	After the test motors shall be approved as specified in item 7-2.
6-6	Free fall	<p>Test state: Set the motor to the approximately 75 g (include the motor) weight of block drop the motor on the concrete floor. Height: 1.5 m Direction: 6/6faces Number of times: Twice each</p>	After the test motors shall be approved as specified in item 7-2.
6-7	Heat shock	<p>Test cycle: 20 cycles</p>  <p>The diagram shows a square wave representing a temperature cycle. The high level is labeled $70 \pm 2^{\circ}\text{C}$ and the low level is labeled $-30 \pm 2^{\circ}\text{C}$. Each level has a horizontal dwell time of 1h. The total duration of one such cycle is labeled as 1 cycle.</p>	After 2 hours exposure in ordinary temperature and humidity, Motors shall be approved as specified in item 7-2.

7. Requirements

Items		Requirements	
7-1	Table A	1) Rated speed: 2) Rated current: 3) Starting voltage:	Initial data -30% Min, Initial data +60% Max $\pm 30\%$ / Initial data $\pm 30\%$ max 2.0 V DC max
7-2	Table B	1) Rated speed: 2) Rated current: 3) Starting voltage:	$\pm 30\%$ / Initial data $\pm 30\%$ max $\pm 30\%$ / Initial data $\pm 30\%$ max 2.0 V DC max

8. Matters to be paid attention to when using motor

8-1 Please lay the motors carefully in transportation to avoid any serious damage to the motor body or its electric function because of collision.

8-2 Please use and storage motors according to N0.2 item (Operating Conditions) in specification, or else motor characteristics would be affected.

8-3 Make arrangement to limit the storage period to 6 months or less. Condensation of atmosphere must be avoided in motor usage or opening the packaging of the motor.

8-4 For proper operation, storage and operating environment must not contain corrosive gases. For example H₂S, SO₂, NO₂, Cl₂, etc. In addition storage environment must not have materials that emit corrosive gases especially from silicon, cyanic, formalin and phenol group. In the mechanism or the set, existence of corrosive gases may cause no rotation in motor.

8-5 Please don't stall the shaft for a long time after powering, and not to touch the weight when motor is rotating.

8-6 There should be no sundries (such as grain, fibre, hair, small tape, glue etc.) in the shaft end play.

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