

**Model No.****NFP-WS1234**

1. Application

This article regulates the relevant technical requirements and test methods of model NFP-WS1234, BLDC Vibration Motors.

2. Operating Conditions

NO.	Item	Specification
2-1	Rated voltage	3.7V DC
2-2	Operating voltage	3.0~4.5V DC
2-3	Rotation	CW(clockwise)
2-4	Operating environment	-20~+70°C, 10~90%RH
2-5	Storage environment	-20~+70°C, 10~90%RH

3. Testing Conditions

NO.	Item	Specification
3-1	Temperature	20 ± 3°C
3-2	Humidity	65 ± 20% RH
3-3	Air Pressure	1013 ± 40 hPa
3-4	Power	Constant DC Current

4. Initial Electrical Characteristics

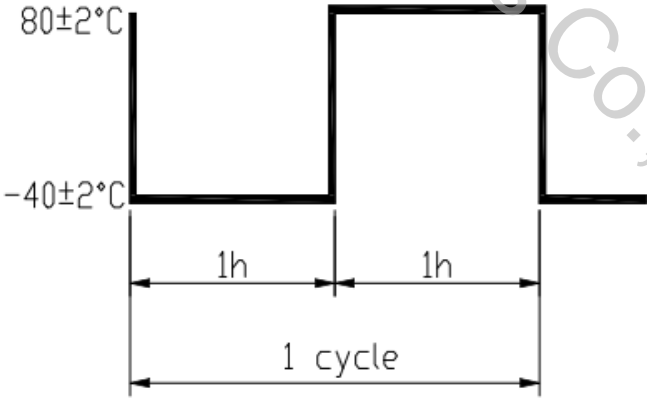
NO.	Item	Specification	Condition / Remark
4-1	Rated Speed	8,000rpm Min	At rated voltage and rated load.
4-2	Rated Current	85mA Max	
4-3	Starting Current	200mA Max	Motor is rotating at min starting voltage.
4-4	Starting Voltage	2.5V DC Max	
4-5	Insulation Resistance	10MΩ Min	At DC 100V between lead wire and case.

5. Mechanical Characteristics

NO.	Item	Specification
5-1	Bracket deflection strength	≥9.8N
5-2	Mechanical noise	≤50dB (A)
5-3	At rated voltage and scene noise as 30dB (A)Max. The shaft is horizontally fastened to the test jig (100g). The Microphone faces the plane of motor along the shaft. The distance is 10cm.	
5-3	Vibration Test	

6. Reliability Characteristics

NO.	Item	Specification	Judgment
6-1	Life test	<p>Test cycle: 750H</p>	<ol style="list-style-type: none"> 1) Rated speed: Initial data ±50% 2) Rated current: Initial data ±50% 3) Starting voltage: 2.5V DC MAX 4) Should not fail in starting 5) Should not be unusual mechanical noise

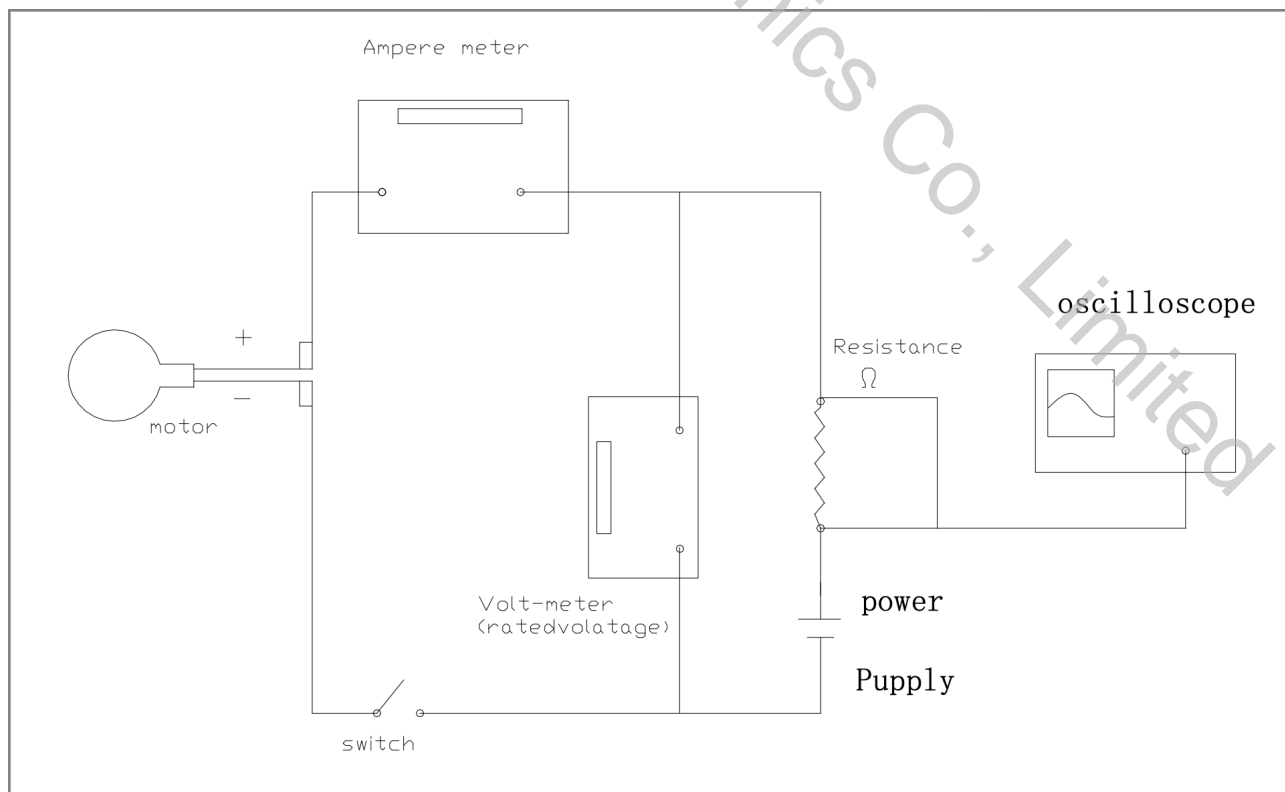
NO.	Item	Specification	Judgment
6-2	Low Temperature Exposure	Temperature: $-30 \pm 2^{\circ}\text{C}$ Time: 96h Humidity: Ordinary Humidity	After 4h exposure in the ordinary temperature and humidity, change rates of the motor's performance should accord with below requirements: 1) Rated speed: within $\pm 30\%$ of initial value 2) Rated current: within $\pm 30\%$ of initial 3) Starting voltage: 2.5V DC Max
6-3	High Temperature Exposure	Temperature: $+80 \pm 2^{\circ}\text{C}$ Time: 96h	
6-4	Humidity Exposure	Temperature: $+65 \pm 2^{\circ}\text{C}$ Humidity: 90%~95%RH Exposure time: 96h No condensation of moisture	
6-5	Vibration	Displacement(P-P): 1.5mm Frequency: 10~55~10Hz/min Direction: x-y-z Time: 30min/Each	
6-6	Free fall	Test state: Set the motor to a block of an approx. 150g weight (including the motor) and drop it onto the concrete floor. Height: 1.5m Direction: $\pm x, \pm y, \pm z$ Number of times: 3 times each direction	
6-7	Temperature Cycle test	 <p>Temperature: $-40^{\circ}\text{C} \sim 80^{\circ}\text{C}$ Time: 2h Circle cycle: 10 cycles</p>	

7. Standard Measuring Method



Vibration meter Test Jig (for Clamping the Motor in Place) Multi-functional Test Meter Oscilloscope Noise Test Meter

8. Measuring Method & Circuit Map



9. Caution in Use

NO.	Item
9-1	You might encounter functional and life problems if you use it different from the standard. Please be careful of the range of use, like voltage etc.
9-2	When motor using, be sure to draw on the lead wire (+ Pole) terminal connected to the power supply (+ Pole), (- pole) terminal connected to the power supply (- pole) after use, otherwise the MOTOR will burn out.
9-3	Please be careful of that the storage in high temperature and humidity and noxious gas might cause hindrances to motors.
9-4	Drive IC can be damaged by power plug short due to careless test. In order to prevent damage of Driver IC, please connect 2 μ F condenser to motor in a row(parallel connection) with power plug(+/-).
9-5	Please hold the case part lightly as much as you can when you use motors.
9-6	Please do not use above DC4.5V for preventing Driver IC.
9-7	Please avoid being near and contacting magnetic materials like magnet which might encounter functional problems.
9-8	If some materials(metal, powder) and dust become mixing condition in the motor it might cause feature declines by occurring rotation faulty and abnormal sound so please be clean the working environment and careful when you deal with the motor.
9-9	Please be careful of not soaking in liquid like water or alcohol.
9-10	Packing method: Refer to packing drawing. But, it could be changed on user's demand.
9-11	It can't guarantee if the motors are used out of the range of fulfilling this specification.
9-12	Any further conditions or change of this APPROVAL REQUEST take effect by mutual consent.
9-13	If the motor or motor application products are stored for more than 6 months, measures must be taken to activate the motor several times before use to ensure the subsequent normal operation of the motor.

10. Environmental Management Materials

NO.	Item
The product should be in compliance with RoHS/ REACH requirements:	
10-1	Cadmium and Compound: $\leq 100\text{PPM}$
10-2	Lead and Compound: $\leq 1000\text{PPM}$
10-3	Hydrargyrum and Compound: $\leq 1000\text{PPM}$
10-4	+6 Chromium and Compound: $\leq 1000\text{PPM}$
10-5	PBB and Compound: $\leq 1000\text{PPM}$
10-6	PBDE and Compound: $\leq 1000\text{PPM}$
10-7	The allowed content of Cl and Br is 1500PPM Max for total
10-8	The allowed content of Cl is 900PPM Max.
10-9	The allowed content of Br is 900PPM Max.

11. Outline Drawing

Rated voltage: 3.7V DC

Rated current: 85mA Max

Rated speed: 8,000rpm Min

Starting voltage: 2.5V Max

Insulation resistance: $\geq 10\text{M}\Omega$

Wire spec: AWG32# UL3302

