



QX MOTOR Co., Ltd.

Model: QX-Flat-1027

# QX MOTOR Co., LTD.

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## Specification for approval

Customer	Radiotech
Customer code	11889
Model	Flat type vibration motor
	QX – Flat – 1027
Date	2021-04-25

Signature of approval




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# QX-Flat-1027 Specification

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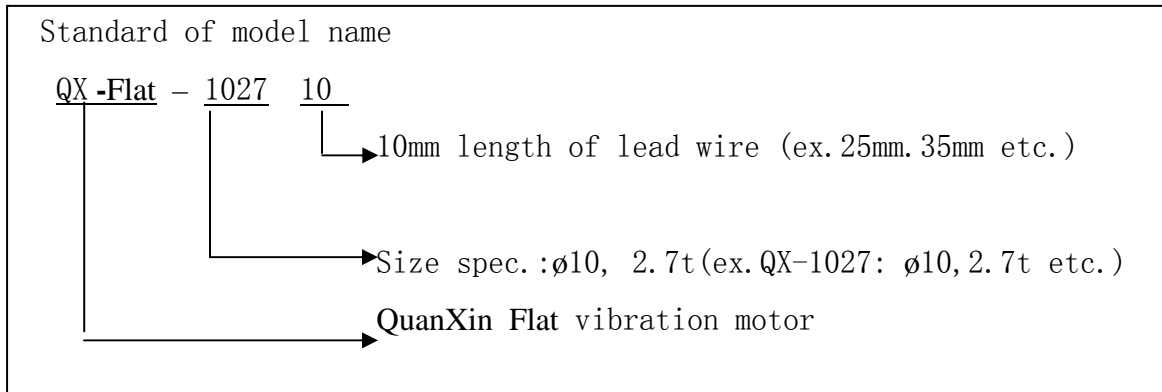
Designed	Technical	Checked	Approved
			刘俊峰



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### 1. Scope of application

This specification sheet is stipulated for vibration motor, Which is manufactured by Shenzhen ShuangHuan QuanXin Electromechanic Co., Ltd. for mobile phone.



### 2. Standard operating condition

NO	ITEM	RATED CONDITION
2-1	Standard voltage	Dc 3.0v
2-2	Operating voltage range	Dc 2.5-3.5v
2-3	Rotating direction	CW, CCW
2-4	Operating temperature range	-10°C----+60°C
2-5	Storage temperature range	-30°C----+70°C

### 3. Measuring condition

NO	ITEM	RATED CONDITION
3-1	Temperature	5°C----35°C
3-2	Humidity	35%-75%RH
3-3	Power supply, Voltage source	Dc power supply or battery3.0v
3-4	Posture of motor	State of standard measurement



#### 4. Electrical characteristic

No	ITEM	UNIT	SPEC	CONDITION
4-1	Standard speed	Rpm	13000±3000	Standard voltage:dc 3.0v
4-2	Standard current	mA	85Max	Standard voltage:dc 3.0v
4-3	Min. starting voltage	V	2.3Max	On/off-1cycle, Tt15cycles under dc3v
4-4	Terminal resistance	Ω	60±20%	Each brush contacts each pole of commutator
4-5	Starting current	mA	230MAX	Motor locking
4-6	Insulation resistance	MΩ	10MIN	Measuring between case and terminal(DC 100V)



**5. Mechanical characteristics**

NO	ITEM	UNIT	SPEC	CONDITION
5-1	Vibration strength	G	(0.7)	<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>Testing Jig(75g)</p> </div> <div style="text-align: center;"> <p>Motor</p> </div> </div> <p style="text-align: center;">Acceleration Sensor</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Vibration Meter</div> <p>Motor : be fixed Standard voltage: dc3.0v Stipulation at rotating speed</p>
5-2	Mechanical noise	db	55Max	<div style="display: flex; justify-content: center; align-items: center;"> <div style="text-align: center; margin-right: 20px;"> <p>100mm</p> </div> <div style="text-align: center;"> <p>Sound Level meter</p> </div> </div> <p style="text-align: center;">Standard microphone</p> <p style="text-align: center;">Motor</p> <p style="text-align: center;">Testing Jig(75g)</p> <p>Motor : be fixed Standard voltage: dc3.0v Back Ground Noise 25db Max phone should be vertical</p>
5-3	Shaft pull strength	Gf	500Min	Demolition test by push-pull gauge
5-4	Bracket deflection strength	Gf	500Min	Demolition test by push-pull gauge



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**6、 Environmental test**

NO	NAME OF TEST	TEST CONDITION
6-1	Low temperature storage test	Exposed at-30°C for 72hours, Then, Return to normal temperature And humidity for 2hours
6-2	High temperature storage test	Exposed at+70°C for 72hours, Then, Return to normal temperature And humidity for 2hours
6-3	High humidity storage test	Exposed at+40°C90%rh for 72hours, Then, Return to normal temperature And humidity for 2hours
6-4	Thermal shock test	Exposed at-30°C 2hours, Sweep time 1hr, +85°C 2hrs(1cycle), totalize 15cycles, Return to normal temperature And humidity for 2hours
6-5	Drop test	6 Free falls(6faces x 1times)from 1.5m height to floor after setting in dummy cellular
6-6	Withstand vibration test	Acceleration:2.2g, frequency:10-55hz/minute s, set in dummy cellular – this motor shall be applied for a period of 10minutes in each of 3 mutually perpendicular axis

## Judgement standard

a: Measured data after test must satisfy the following conditions;

- Starting voltage : Must satisfy electrical characteristics
- Rpm : Changing rate must be within  $\pm 20\%$  of initial data
- Standard current : Must satisfy electrical characteristics
- Terminal resistance : Chang rate be within  $\pm 20\%$  of initial data.

(Changing rate (%)=(Data after test – data before test)/data before test x100)

b: There must be no external transformation ,Crack,part secession when inspected by naked eyes.



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## 7、 Life cycle test

### 7-1 On/off test

- Test condition : 2 sec on , 2sec off 1cycle , 50,000 cycles.

(30v, at normal temperature and humidity)

- Judgement standard : Applying judgement standard of

6.environmental test.

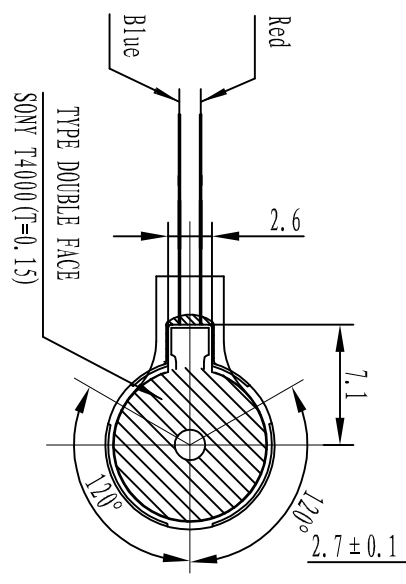
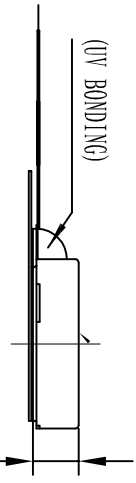
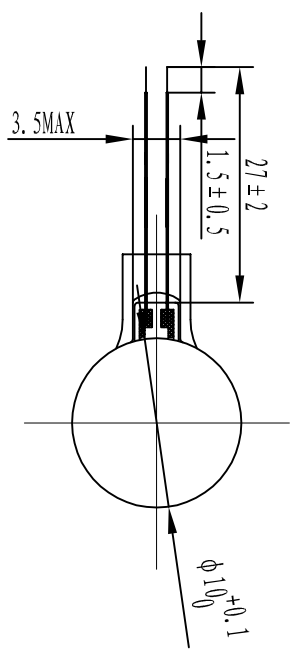
(range of standard rpm : initial data $\pm$ 30%)

**8、 Caution**

- (1) As this motor is small and precise ,It do not drop or mark over 0.5kgf force while transportation , Custody and attaching to the set. otherwise ,The external transformation and changing of electrical characteristics could be happened.
- (2) Please be careful not to be contactted fluid substances such as water and alcohol.
- (3) Performance of the motor can be deteriorated under the long period of custody and operation with high temperature.
- (4) Avoid using the motor in the following environment.
  - High temperature and high humidity area.
  - Corrosive gas such as H<sub>2</sub>s、 S<sub>0</sub>2、 .No<sub>2</sub>、 Cl<sub>2</sub> etc.
- (5) Please do not operate or store the motor adjacent to magnet or apparatus that has a magnetic field.
- (6) Please be careful that there exists a leaking magnetic flux on the surface of bracket.
- (7) Due to interaction between brush and commutator, there is a possibility to occur electrical noise slightly
- (8) Packing method : subject to user's final confirmation.

It is our principal that problems have to be solved between buyer and seller by mutual agreement based on specification





- NOTE:
1. PLEASE BE CAREFUL NOT TO DROP OR MAKE OVER 5kg. f FORCE.
  2. APPLYING GENERAL TOLERANCE GRADE3 FOR UNMARKED TOLERANCE.
  3. LEAD WIRE SPEC: UL1571#32. (GRADE3 : 0-4 (± 0. 2), 4-16 (± 0. 3))
  4. WEIGHT OF MOTOR ASS'Y ABOUT 1.14G.
  5. "+" VOLTAGE APPLIED TO RED WIRE

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Radiotech		深圳双环全新机电股份有限公司	
标记	来历	审核	批准
设计		刘俊峰	
工艺		20210425	
比例	2.5:1	数量	重量
阶段标记			
外形图		QX-1027-3.0-07	