



**VITECH** Vitai Techonology Co., Ltd.

# ***PRODUCT SPECIFICATION***

**PRODUCT:**  $\phi$  20 STEPPING MOTOR

**MODEL CODE:** **M20SP-GW15**

**CUSTOMER:**

DATE

/ /

**APPROVAL BY**

DATE

/ /

<b>APPROVAL</b>	<b>CHECKED</b>	<b>MAKE</b>

**Vitai Technology Co., Ltd.**

9F, No. 46, Chin-An Road, Chung-Ho City, Taipei Taiwan

Tel: 886-2-22467373

Fax: 886-2-22467115

[www.vitech.com.tw](http://www.vitech.com.tw)

**PRODUCTS SPECIFICATION**  
**SPECIFICATION OF STEPPING MOTOR**  
**MODEL CODE : M20SP-GW15**

**【SCOPE】**

This specification is applied to the stepping motor to be delivered by Vitai Technology Co., Ltd. Electric Equipment Motor Division, motor applied on any related computer product for any technical groups.

**【 I 】 Standard Characteristics And Condition**

I-1	Outside Diameter	$\phi$ 20 mm
I-2	Type	PM type stepping motor
I-3	No. of phases	2 phase (Bipolar)
I-4	Coil resistance	15 $\Omega$ /phase $\pm$ 8%
I-5	Rated voltage	5.0 V/phase
I-6	Rated current	333 mA/phases
I-7	Step angle	18 degrees $\pm$ 10%
I-8	Coil inductance	mH/phase (at 1KHZ) (reference value)
I-9	Excitation	2-2 bipolar
I-10	Rotating direction	Clockwise/Counter clockwise
I-11	Insulation class	Class E, 115 $^{\circ}$ C
I-12	Insulation resistance	10M $\Omega$ or more by DC 500V Voltage (20 $^{\circ}$ C · 65%RH)
I-13	Storing temperature	-20 $^{\circ}$ C to 75 $^{\circ}$ C

**【 II 】 Characteristics:**

Measuring conditions : Excitation method phase excitation bipolar method.

Supply voltage 5.0 V ( STEPPING MOTOR )

II.1	Maximum pull out rate	990 pps or more ( no load )
II.2	Maximum pull in rate	880 pps or more ( no load )
II.3	Pull-in torque	24.0 g-cm or more at 500 pps
II.4	Pull-out torque	26.8 g-cm or more at 500 pps
II.5	Detent torque	15 g-cm max.
II.6	Holding torque	77 g-cm or more
II.7	Motor current	130 mA/phase or less at 500 pps
II.8	Operating Temperature	0 $^{\circ}$ C to 50 $^{\circ}$ C Normal humidity

# SPECIFICATION OF STEPPING MOTOR

## 【NOTE】

1. All torque measurement conditions of the norms are listed on the above.
2. The measurement about Max. pull-out rate and Max. pull-in rate are conditioned with no-load.
3. Driver circuit helps to torque accuracy.

## 【Ⅲ】 LIFE CYCLE TEST

### Ⅲ.1<Note>

Motor with no-load , more than 100 thousand seek at ordinary temperature , ordinary humidity (20°C ,65%RH).

Satisfaction for electric characteristics and mechanical characteristics.

### Ⅲ.2 Life test conditions:

Test circuit are according to enclosure 1, the more test active are listed as below. It is repetition after Inversion.

Item	Pulse rate	Time	Voltage	Remarks
1	100-800 pps	150msec	5V	slow-up
2	800 pps	250msec	5V	
3	800-100 pps	150msec	5V	slow-down
4	100 pps	250msec	5V	

## 【IV】 Special test:

Item	Test condition	Specification
Vibration test	The motor shall withstand vibration test when subjected to a variable vibration of 5-60 HZ (for 2 minutes) for 20 minutes in three directions respectively.	Motor characteristics required to Meet Standards.
Drop test	The motor had to pretend in a box. All 10kg less drop form 100cm high All 10kg more drop form 76cm high	In Standard.

# SPECIFICATION OF STEPPING MOTOR

Item	Test condition	Specification
High-temp storage test	The motor shall satisfy each requirements after storage in ambient condition of 75°C For 168hours.	Motor characteristics required to Meet Standards.
Low-temp storage test	The motor shall satisfy each requirements after storage in ambient condition of -20°C for 168 hours.	In Standard.
Noise test	At 500 pps, DC 5V	No abnormal noise existing.
Humidity test	The unit shall satisfy each requirements after storage in ambient condition of RH 90% for 168 hours.	NO extreme resting of the metal part or the insulation resistance not less than 10MΩ.

## 【 V 】 SPECIAL NOTE

- V.1 An operation or use in a way departing from the standards may extremely shorten the performance or service life. Please take care of the operating range of voltage and etc.
- V.2 Avoid string in an environment high in temperature and humidity as far as possible as the motor would be adversely affected.
- V.3 Whenever any matters not specified in this specification require specification, contact us beforehand.
- V.4 Whenever any trouble occurs, both parties shall consult with each other according to this specification to determine remedial action.
- V.5 The construction, parts and etc., are subject to change for the purpose of improving the performance within the range satisfying this specification.
- V.6 Check in advance to see that your intended application is met.
- V.7 Maximum thermal temperature is 120°C for copper windings. Please avoid windings getting over 120°C.
- V.8 Minimum mechanics voltage of this stepping motor need about 1.4 (V).
- V.9 Minimum mechanics current of this stepping motor need about 0.15 (A).
- V.10 Weld condition: The connector have to lay on tin: weld-iron 30W, Temperature range: 280°C ±10°C, Weld time: 0.8~1 second.

# SPECIFICATION OF STEPPING MOTOR

**【VI】 CODE NAME**

**M 20 SP – G X 10**

<b>M</b>	Motor
<b>20</b>	Motor outside diameter ( $\phi$ 8 mm , $\phi$ 10 mm , $\phi$ 15 mm, $\phi$ 20 mm)
<b>SP</b>	Stepper
<b>G</b>	Gear (L = Lead Screw ,X=Without Gear or Lead Screw)
<b>H</b>	Holder (H = Holder ,N = Nut)
<b>X</b>	Lead Wire ( F= FPC 、 X = Without Lead Wire )
<b>10</b>	Resistance {Ohm}