



# Cooler Master Co., Ltd.

TEL: 0752-5755888 FAX: 0752-2629468

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## SPECIFICATION FOR APPROVAL

Customer \_\_\_\_\_ Framework \_\_\_\_\_

Project Name \_\_\_\_\_ Lotus \_\_\_\_\_

Description \_\_\_\_\_ UMA FAN CCW \_\_\_\_\_

Customer NO. \_\_\_\_\_ Rev. \_\_\_\_\_

CoolerMaster Model NO. 729004210-GP3 Rev. L1 \_\_\_\_\_

Sample Issue NO. \_\_\_\_\_

Sample Issue Date \_\_\_\_\_

PLEASE SEND ONE COPY OF THIS SPECIFICATION BACK  
AFTER YOU SIGNED APPROVAL FOR PRODUCTION PRE-ARRANGMENT

APPROVED BY:	
PE	
QC	
RD	
DATE:	

Cooler Master Co., Ltd.

N0.18, He Chang E.4th Rd.,Zhong Kai High-tech industrial Development Zone,  
Hui Zhou City,Guang Dong Provinc, China 516006

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## Revision History

Date of Release	Revision No.	CoolerMaster		
		Approval by	Checked by	Drafted by
2023.01.10	L1	Shimang Xu	Xinjun Wu	Wangxin Chen
		Date: 2023.01.10	Date: 2023.01.10	Date: 2023.01.10



## NOTICE

01. Cooler Master will not guarantee the performance of the products if the application condition falls outside the parameters set forth in the specification.
02. A written request should be submitted to Cooler Master prior to approval if deviation from this specification is required.
03. Please exercise caution when handling fans.Damage may be caused when pressure is applied to the impeller, if the fans are handled by the lead wires,or if the fans are hard-dropped to the production floor.
04. Except as pertains to some special designs, there is no guarantee that the products will be free from any such safety problems or failures as caused by the introduction of powder,droplets water or encroachment of insect into the hub.
05. The above-mentioned conditions are representative of some unique examples and viewed as the first point of reference prior to all other information.
06. It is very important to establish the correct polarity before connecting the fan to the power source.Positive(+) and Negative(-).Damage may be caused to the fans if connection is with reverse polarity,as there is no method to protect against such error.
07. Cooler Master fans are not suitable where any corrosive fluids are introduced to their environment.
08. Please ensure all fans are stored according to the storage temperature limits specified.Do not store fans in a high humidity environment.We highly recommend performance testing is conducted before shipping,if the fans have been stored over 6 months.
09. Not all fans are provided with the lock rotor protection feature.If you impair the rotation of the impeller for the fans that do not have this function,the performance of those fans will lead to failure.
10. Please be cautious when mounting the fan.Incorrect mounting of fans may cause excess resonance,vibration and subsequent noise.
11. It is important to consider safety when testing the fans.A suitable fan guard should be fitted to the fan to guard against any potential for personal injury.
12. Except where specifically stated,all tests are carried out at relative(ambient)temperature and humidity conditions of 25°C,65%.The test value is only for fan performance itself.
13. Be certain to connect an over "4.7uf"capacitor to the fan externally when the application calls for using multiple fans in parallel,to avoid any unstable power.



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## 1. SCOPE:

THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE DC BRUSHLESS BLOWER. THE BLOWER MOTOR IS WITH THREE PHASE AND FOUR POLES.

## 2. CHARACTERS:

(CONDITION: 25°C, 12.0VDC, 1 ATM)

ITEM	DESCRIPTION
RATED VOLTAGE	12.0 VDC
OPERATION VOLTAGE	10.8~13.2 VDC
INPUT CURRENT	0.5(MAX. 0.8) A
INPUT POWER	6 (MAX. 9.6) W
SPEED	4000±10% RPM
AIR FLOW @RATED VOLTAGE.	22.5 (MIN 17.5) CFM
AIR PRESSURE @RATED VOLTAGE.	6.2 (MIN 5.7) mmH <sub>2</sub> O
ACOUSTICAL NOISE AT 0.5(AVG.)	43 TYP. (MAX. 48) dB(A)
ROTATION	CCW
INSULATION STRENGTH	10 MEG OHM MIN. AT 500 VDC (BETWEEN FRAME AND (+) TERMINAL)
DIELECTRIC STRENGTH	5 mA MAX. AT 500 VAC 60 Hz 1 MIN (BETWEEN FRAME AND (+) TERMINAL)
BEARING TYPE	LOOP DYNAMIC BEARING
LIFE EXPECTANCE (L10)	30,000 HOURS CONTINOUS OPERATION AT 40 °C WITH 35 ~ 45 %RH.
USE NON-HALOGEN FREE IN FAN	HF
SAFETY CURRENT(5V)	0.80A

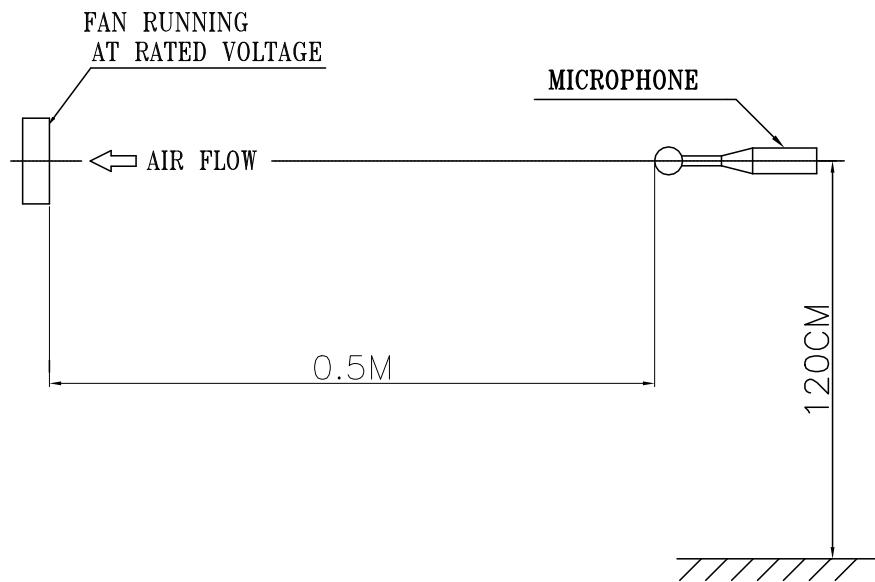


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- NOTES:
- a. ALL READINGS ARE MEASURED AFTER STABLY WARMING UP THROUGH 10 MINUTES.
  - b. THE VALUES WRITTEN IN PARENS , ( ), ARE LIMITED SPEC.
  - c. ACOUSTICAL NOISE MEASURING CONDITION:



NOISE IS MEASURED AT RATED VOLTAGE IN FREE AIR IN ANECHOIC CHAMBER WITH B & K SOUND LEVEL METER WITH MICROPHONE AT A DISTANCE OF FIFTY CENTIMETER FROM THE FAN INTAKE.

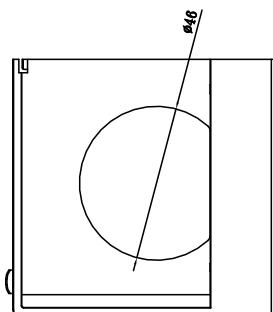


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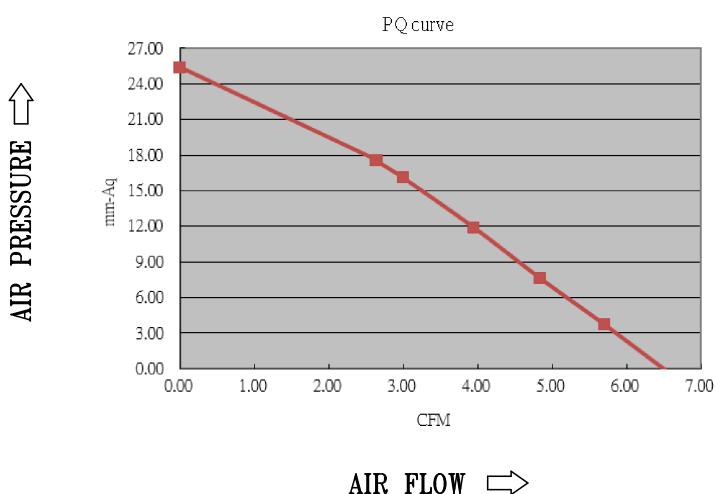
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## D. P-Q TEST COVER FIXTURE:(SEE DIMENSIONS DRAWING)



## E. P-Q CURVE :



\* TEST CONDITION: INPUT VOLTAGE-----OPERATION VOLTAGE  
TEMPERATURE-----ROOM TEMPERATURE  
HUMIDITY-----65%RH  
TEST HOUSING-----SEE DIMENSIONS DRAWING  
AVERAGE DATA BASED ON LIMITED SAMPLE QTY



### 3. MECHANICAL:

3-1. DIMENSIONS -----	SEE DIMENSIONS DRAWING
3-2. COVER -----	SGCC
3-3. FRAME -----	PLASTIC UL: 94V-0
3-4. BASE -----	SGCC
3-5. IMPELLER -----	PLASTIC UL: 94V-0
3-6. BEARING SYSTEM -----	LDB
3-7. WEIGHT -----	NA GAMS

### 4. ENVIRONMENTAL:

4-1. OPERATING TEMPERATURE -----	0 TO +70 DEGREE C
4-2. STORAGE TEMPERATURE -----	-25 TO +70 DEGREE C
4-3. OPERATING HUMIDITY -----	5 TO 90 % RH
4-4. STORAGE HUMIDITY -----	5 TO 90 % RH

### 5. PROTECTION:

#### 5-1. LOCKED ROTOR PROTECTION

IMPEDANCE OF MOTOR WINDING PROTECTS MOTOR FROM FIRE IN 96 HOURS OF LOCKED ROTOR CONDITION AT THE RATED VOLTAGE.

### 6. RE OZONE DEPLETING SUBSTANCES:

#### 6-1. NO CONTAINING PBBs, PBB0s, CFCs, PBBEs, PBDPEs AND HCFCs.

### 7. LEAD-FREE DECLARATION:

#### 7-1. THE FAN IS A LEAD-FREE PRODUCT.

### 8. PRODUCTION LOCATION

#### 8-1. PRODUCTS WILL BE PRODUCED IN CHINA.

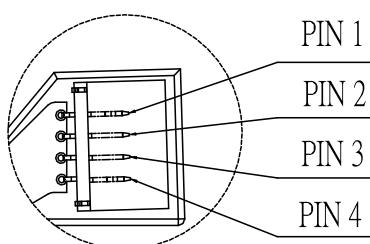
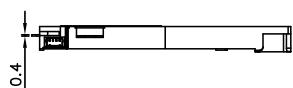
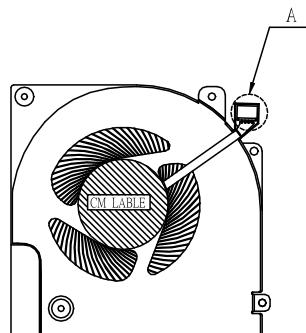
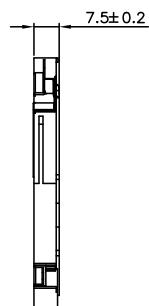
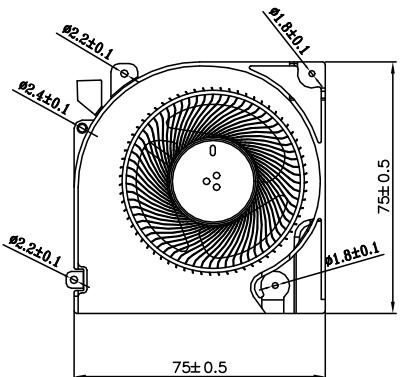


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## 3. DIMENSION DRAWING:



DETAIL A

### NOTES :

1. FPC(REF);

PIN 1: ---1PCS--(-)

PIN 2: ---1PCS--(PWM)

PIN 3: ---1PCS--(FG)

PIN 4: ---1PCS--(+)

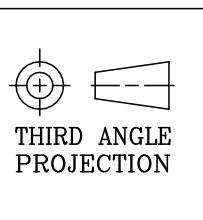
2. Housing : WB1001H-H004N---4P

3. UNIT : MM; THE FOCUS CONTROL size .

4. THIS PRODUCT IS RoHS COMPLIANT

5. DIMENSIONAL TOLERANCES

TOOLING NO. TBD			
SELECT V	TBD		
DIM TOL ±	Metal	Plastic	USR
0~6	0.10	0.10	
6~30	0.15	0.15	
30~120	0.20	0.25	
120~300	0.25	0.40	
300~600	0.40	0.60	
600~1200	0.50	0.80	
ANG. TOL	1°	0.5°	





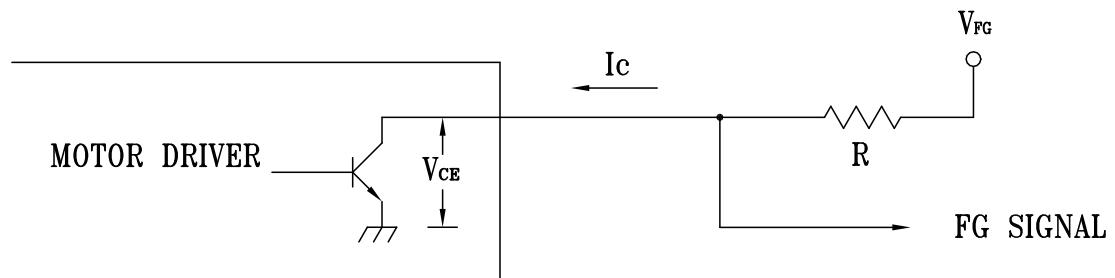
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## 11. FREQUENCY GENERATOR (FG) SIGNAL:

### 11-1. OUTPUT CIRCUIT - OPEN COLLECTOR MODE:

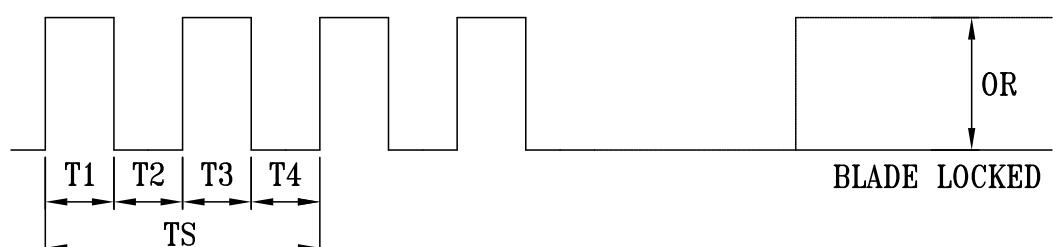
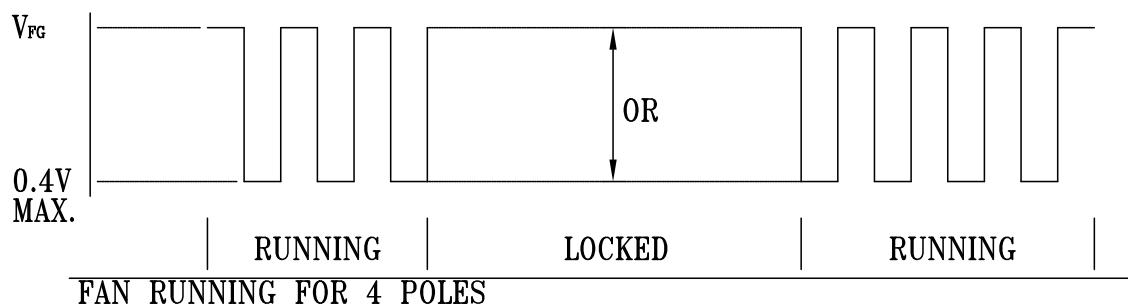


### 11-2. SPECIFICATION:

$$V_{CE} \text{ (sat)} = 0.5V \text{ MAX.} \quad V_{FG} = 5.0V(V_{cc} \text{ MAX})$$

$$I_C = 5\text{mA MAX.} \quad R \geq V_{FG}/I_C$$

### 11-3. FREQUENCY GENERATOR WAVEFORM:



$$N = \text{R.P.M}$$

$$TS = 60/N(\text{SEC})$$

\*VOLTAGE LEVEL AFTER BLADE LOCKED

\*4 POLES



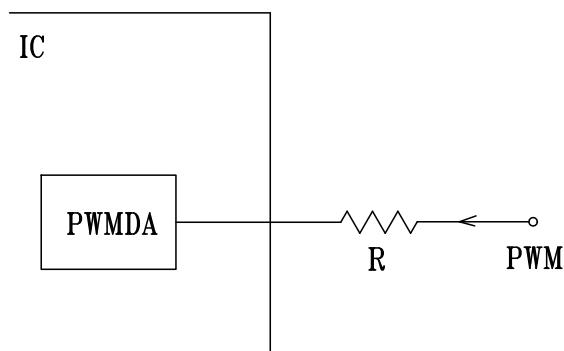
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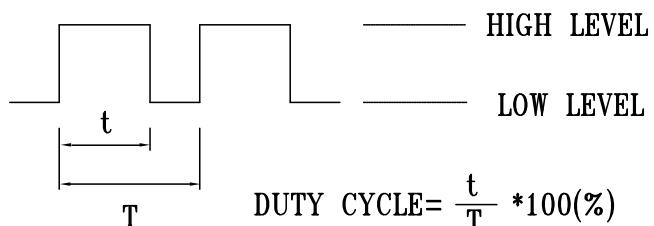
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## 12. PWM CONTROL FUNCTION:

### 12-1. PWM CONTROL INTERFACE



SIGNAL VOLTAGE RANGE: 0 ~ 5V



- HIGH LEVEL : 5.0V max.  
2.5V min.
- LOW LEVEL : 0.8V max.  
0 min.

- THE ACCEPTABLE FREQUENCY OF PWM SIGNAL IS 20 KHz ~ 30 KHz.
- THE PREFERRED OPERATING FREQUENCY OF PWM SIGNAL IS 25K Hz.
- AT 100% DUTY CYCLE, THE ROTOR WILL SPIN AT MAXIMUM SPEED.
- AT 0% DUTY CYCLE, THE ROTOR WILL STOP THE SPIN.
- WHEN THE PWM CONTROL LEAD WIRE IS DISCONNECTED, THE ROTOR WILL SPIN AT MAXIMUM SPEED.

### 12-2. FAN CHARACTERISTICS

TEST CONDITION : AT 25°C, V = 12.0VDC & PWM SIGNAL AS FOLLOW

\* PWM SIGNAL

DUTY CYCLE (%)	SPEED RPM. (REF.)
100%	4000±10%RPM
0%	0

PWM FREQUENCY =25K Hz



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- 12-1. DO NOT use or operate this fan in excess of the limitations set forth in this specification. CMR is not responsible for the non-performance of this fan and/or any damages resulting from its use, if it is not used or operated in accordance with the specifications.**
- 12-2. CMR recommends adding a protection circuit to the product or application in which this fan is installed, such as a thermo-fuse, or current-fuse or thermo-protector. The failure to use such a device may result in smoke, fire, electric shock by insulation degradation in cases of motor lead short circuit, overload, or over voltage, and/or other failure.**
- 12-3. CMR recommends installing a protection device to the product or application in which this fan is installed if there is a possibility of reverse-connection between VDC (+) and GND (-). The failure to install such a device may result in smoke, fire, and/or destruction, although these conditions may not manifest immediately.**
- 12-4. This fan must be installed and used in compliance with all applicable safety standards and regulations.**
- 12-5. Use proper care when handling and/or installing this fan. Improper handling or installation of this fan may cause damage that could result in unsafe conditions.**
- 12-6. Use proper care during installation and/or wiring. Failure to use proper care may cause damage to certain components of the fan including, but not limited to, the coil and lead wires, which could result in smoke and/or fire.**
- 12-7. DO NOT use power or ground PWM to control the fan speed. If the fan speed needs to be adjusted, please contact CMR to customize the product design for your application.**
- 12-8. For critical or extreme environments, including non stop operation, please contact CMR and we will gladly provide assistance with your product selection to ensure an appropriate cooling product for your application.**