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## **Specification For Approval**

Customer : \_\_\_\_\_

Description : DC FAN  
\_\_\_\_\_

Customer P/N : \_\_\_\_\_

rev. : \_\_\_\_\_

Delta model no. : THC1748MGCGP  
\_\_\_\_\_

Delta Safety Model No.: THC1748MG  
\_\_\_\_\_

Sample revision. : 01  
\_\_\_\_\_

Issue no.: \_\_\_\_\_

Sample issue date : DEC.21 2017  
\_\_\_\_\_

Quantity : PCS  
\_\_\_\_\_

### 1. SCOPE:

THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE DC BRUSHLESS AXIAL FLOW FAN.

THE FAN MOTOR IS WITH SINGLE PHASE AND EIGHT POLES.

### 2. CHARACTERS:

| ITEM                                       | DESCRIPTION                                                                    |
|--------------------------------------------|--------------------------------------------------------------------------------|
| RATED VOLTAGE                              | 48V                                                                            |
| OPERATION VOLTAGE                          | 36 - 60.0 VDC                                                                  |
| INPUT CURRENT(AVG.)<br>(AT FREE AIR)       | 0.60 (MAX. 0.90) A<br>SAFETY CURRENT ON LABEL : 0.90A                          |
| INPUT POWER(AVG.)<br>(AT FREE AIR)         | 28.8 (MAX. 43.2) W                                                             |
| SPEED<br>(AT FREE AIR)                     | 4100 R.P.M. ±10%                                                               |
| MAX. AIR FLOW<br>(AT ZERO STATIC PRESSURE) | 8.33 (MIN. 7.50) M <sup>3</sup> /MIN.<br>294.2 (MIN. 264.8) CFM                |
| MAX. AIR PRESSURE<br>(AT ZERO AIRFLOW)     | 26.87 (MIN. 21.76) mmH <sub>2</sub> O<br>1.06 (MIN.0.86) inchH <sub>2</sub> O  |
| ACOUSTICAL NOISE (AVG.)                    | 64.5 (MAX. 68.5) dB-A                                                          |
| INSULATION TYPE                            | UL: CLASS A                                                                    |
| INSULATION STRENGTH                        | 10 MEG OHM MIN. AT 500 VDC<br>(BETWEEN PILLOW AND (+) TERMINAL)                |
| DIELECTRIC STRENGTH                        | 5 mA MAX. AT 500 VAC 50/60 Hz ONE MINUTE,<br>(BETWEEN PILLOW AND (+) TERMINAL) |

(continued)

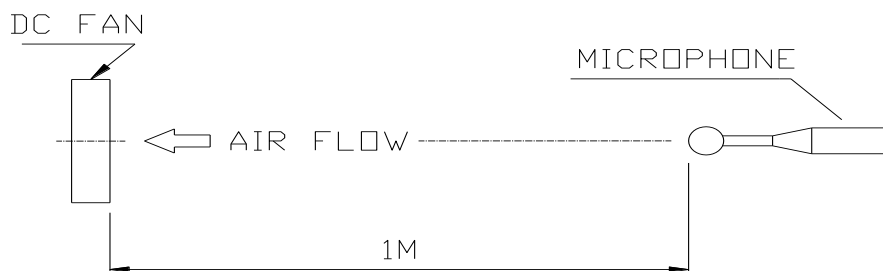
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|                                             |                                                                            |
|---------------------------------------------|----------------------------------------------------------------------------|
| LIFE EXPECTANCE (L10)<br>(AT LABEL VOLTAGE) | 70,000 HOURS CONTINUOUS OPERATION AT 40 °<br>C WITH 15 ~ 65 %RH.           |
| ROTATION                                    | COUNTER CLOCKWISE VIEW FROM NAME<br>PLATE SIDE                             |
| AUTO-RESTART                                | LOCK ROTOR PROTECTED BY ELECTRONIC<br>TIMER WITH AUTOMATIC RESTART FEATURE |

NOTES:

1. ALL READINGS ARE MEASURED AFTER STABLY WARMING UP  
THROUGH 10 MINUTES.
2. STANDARD AIR PROPERTY IS AIR AT (Td) 25°C TEMPERATURE, (RH) 65%  
RELATIVE HUMIDITY , AND (Pb) 760 mmHg BAROMETRIC PRESSURE.
3. THE VALUES WRITTEN IN PARENS , ( ), ARE LIMITED SPEC.
4. THE CHARACTERS SHOWED IN PAGE 1 IS THE CONDITION OF BOTH FANS  
RUN.
5. 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 ONE METER FROM THE FAN INTAKE.

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3. MECHANICAL:

- 3-1. DIMENSIONS----- SEE DIMENSIONS DRAWING
- 3-2. FRAME----- PA66-GF30%-Fr UL: 94V-0
- 3-3. IMPELLER----- PA66-GF30%-Fr UL: 94V-0
- 3-4. BEARING SYSTEM----- TWO BALL BEARINGS
- 3-5. WEIGHT----- 607 GRAMS(REF.)

4. ENVIRONMENTAL:

- 4-1. OPERATING TEMPERATURE----- -10 TO +70 DEGREE C
- 4-2. STORAGE TEMPERATURE----- -40 TO +75 DEGREE C
- 4-3. OPERATING HUMIDITY----- 5 TO 90 % RH
- 4-4. STORAGE HUMIDITY----- 5 TO 95 % 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.
- 5-2. POLARITY PROTECTION  
BE CAPABLE OF WITHSTANDING IF REVERSE CONNECTION FOR  
POSITIVE AND NEGATIVE LEADS.
- 5-3. INGRESS PROTECTION  
THE FAN MEET GR-487 SALT FOG TEST AND A MOTOR ENCLOSURE  
RATE IP-68.

6. RE OZONE DEPLETING SUBSTANCES:

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

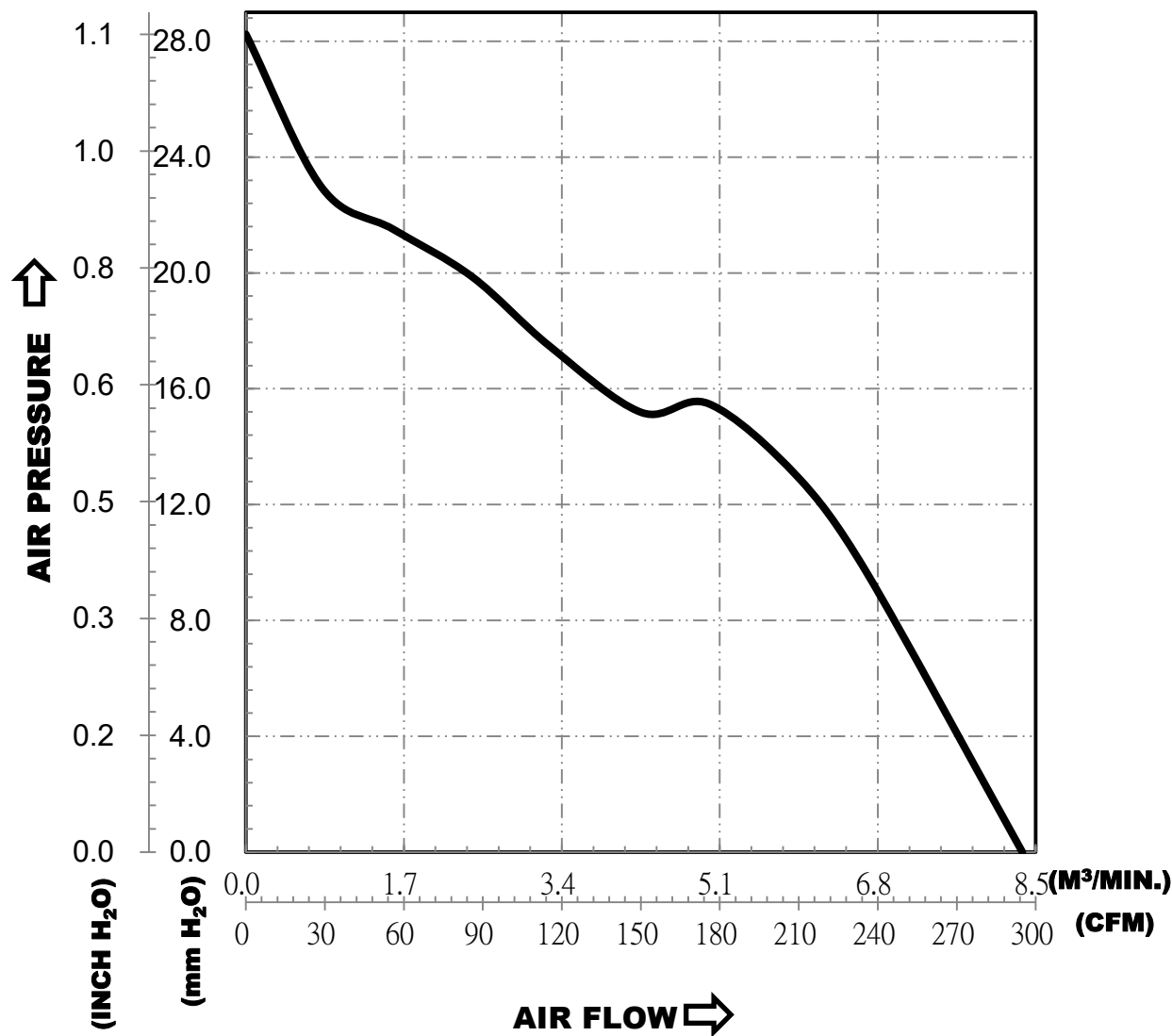
7. PRODUCTION LOCATION

- 7-1. PRODUCTS WILL BE PRODUCED IN CHINA OR THAILAND.

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8. P & Q CURVE:



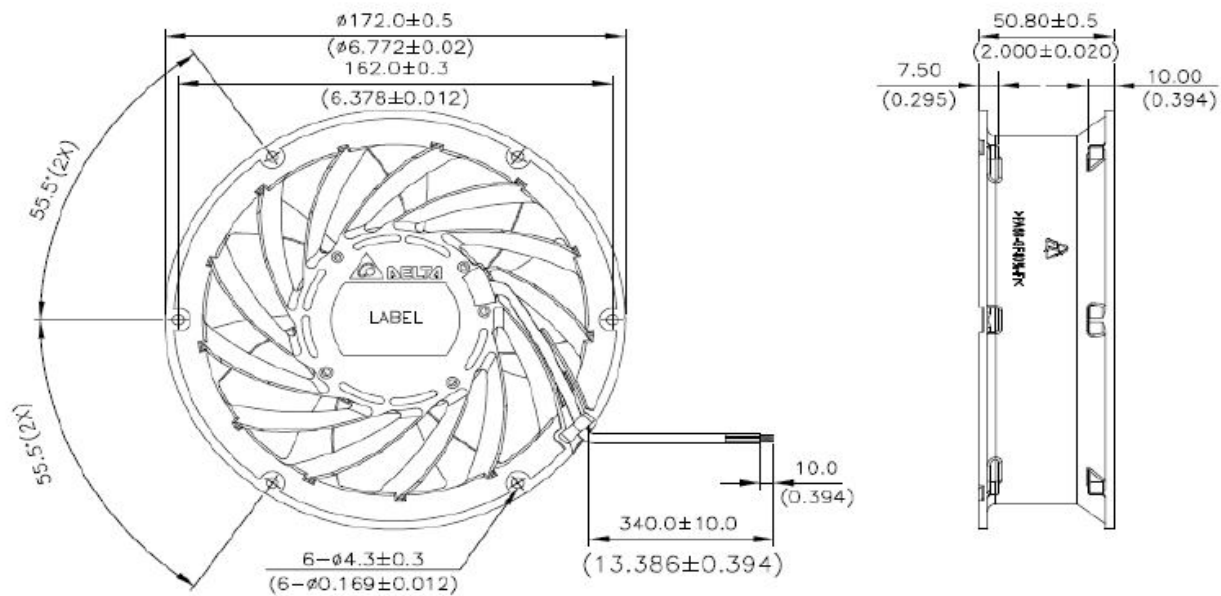
\*TEST CONDITION: INPUT VOLTAGE-----OPERATION VOLTAGE  
TEMPERATURE-----ROOM TEMPERATURE  
HUMIDITY-----65%RH

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## 9. DIMENSION DRAWING:

LABEL:



UNIT: mm(INCH)

## NOTES:

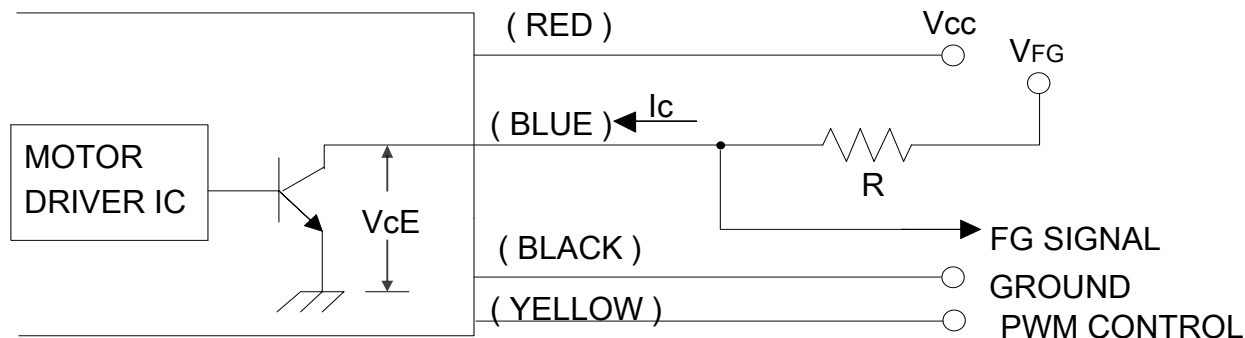
1. LEAD WIRE: PVC WIRE UL2464 AWG#24  
PIN 1: RED WIRE----(+)  
PIN 2: YELLOW WIRE----(PWM)  
PIN 3: BLUE WIRE----(F00)  
PIN 4: BLACK WIRE----(-)
2. THIS PRODUCT IS ROHS COMPLIANT.

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## 10. FREQUENCY GENERATOR (FG) SIGNAL:

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



### CAUTION:

THE LEAD WIRE OF FG SIGNAL CAN NOT TOUCH  
THE LEAD WIRE OF POSITIVE OR NEGATIVE.

### 2. SPECIFICATION:

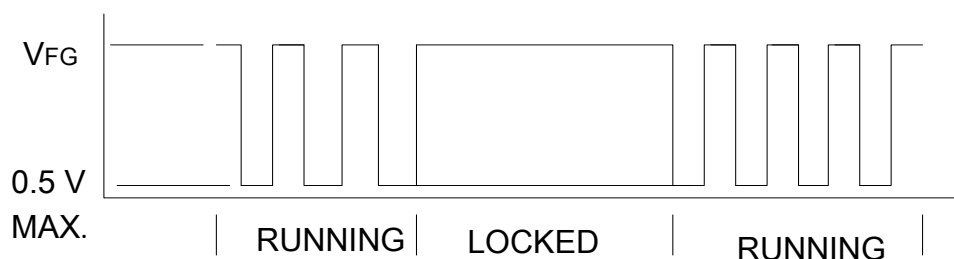
$V_{FG} = 60.0 \text{ V MAX.}$

$I_c = 10 \text{ mA MAX.}$

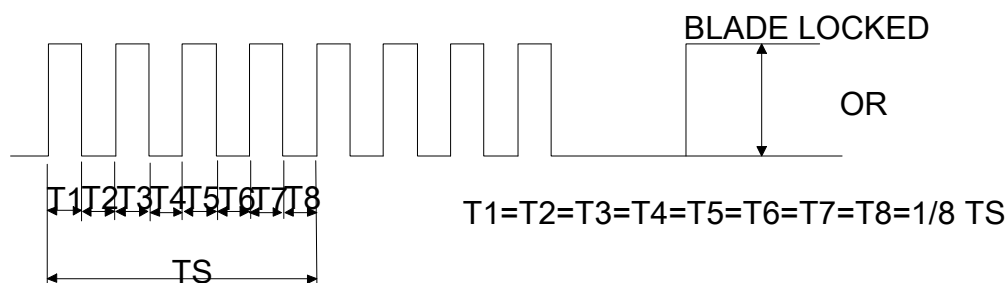
$V_{CE} = 0.5 \text{ V MAX.}$

$R \geq V_{FG} / I_c$

### 3. FREQUENCY GENERATOR WAVEFORM:



FAN RUNNING FOR 8 POLES



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

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

\*VOLTAGE LEVEL AFTER BLADE LOCKED

\*8 POLES

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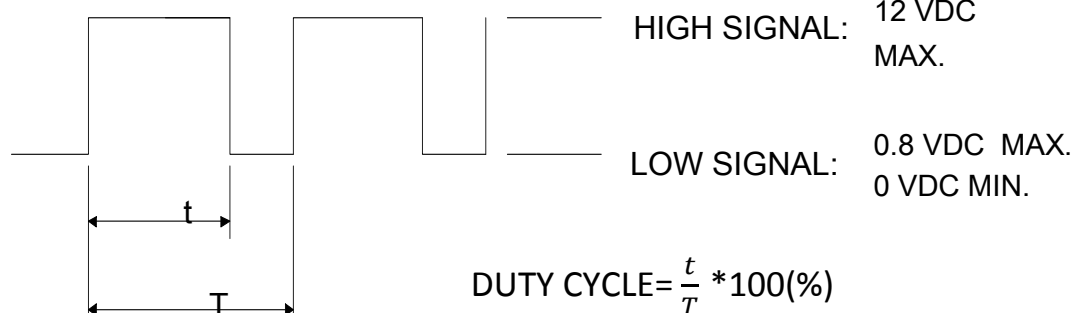
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11. PWM CONTROL SIGNAL:

SIGNAL VOLTAGE RANGE: -0.8VDC~20VDC



\*THE FREQUENCY FOR CONTROL SIGNAL OF THE FAN SHALL BE ABLE TO ACCEPT A 30KHZ~300KHZ(REF.) WITH DIFFERENT SPEED PERFORMANCE.

\*THE PREFERRED OPERATING POINT FOR THE FAN IS 1 KHZ.

\*AT 100% DUTY CYCLE & 48VDC, THE ROTOR WILL SPIN AT MAXIMUM SPEED.

\*AT 0% DUTY CYCLE & 48VDC, THE ROTOR WILL STOP.

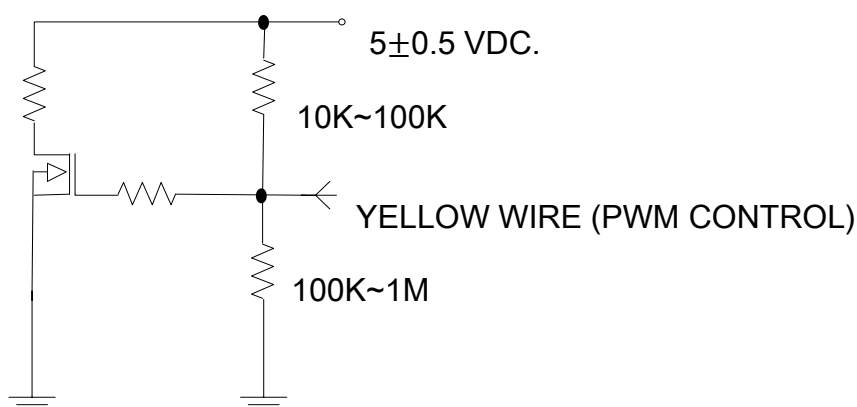
\*WITH CONTROL SIGNAL LEAD DISCONNECTED, THE FAN WILL SPIN AT MAXIMUM SPEED.

\*AT DC48V 1KHZ 20% DUTY CYCLE ,THE FAN WILL BE ABLE TO START FROM A DEAD STOP.

12. SPEED VS PWM CONTROL SIGNAL: (AT 48VDC & PWM F=1KHZ & TEMP=25°C)

| (%) | SPEED R.P.M. | CURRENT (A) TYP. |
|-----|--------------|------------------|
| 100 | 4100±10%     | 0.6              |
| 60  | 3000±10%     | 0.28             |
| 30  | 2000±10%     | 0.13             |
| 0   | 0            | 0.02             |

13. PWM CONTROL LEAD WIRE INPUT IMPEDANCE:



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14. DUTY CYCLE & SPEED CURVE(REF.):

