SPECIFICATION FOR APPROVAL

Customer. STD

Description. DC FAN

Part No. _____ REV. _____

Delta Model No. THD1248HE REV. 00

Sample Issue No. _____

Sample Issue Date. MAY.07 2015

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

APPROVED BY:

DATE :

DELTA ELECTRONICS, INC.
TAOYUAN PLANT
252, SHANG YING ROAD, KUEI SAN INDUSTRIAL ZONE TAOYUAN SHIEN, TAIWAN, R.O.C.
TEL:886-(0)3-3591968
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*** SAMPLE HISTORY***

CUSTOMER: STD

CUSTOMER P/N:

DELTA MODEL: THD1248HE

REV.	DESCRIPTION	DRAWN	CHECKED			APPROVED	ISSUE DATE
			ME	EE	CE		
00	ISSUE SPEC(CPK MODIFIED)	楊朝富	楊朝富	謝宗融		張楯成	05/07'15

DELTA ELECTRONICS, INC.
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STATEMENT OF DEVIATION

****

■ NONE

□ DESCRIPTION :

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SPECIFICATION FOR APPROVAL
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Customer: STD

Description: DC FAN

Customer P/N: REV:

Delta Model NO.: THD1248HE DELTA SAFETY MODEL: THD1248HE

Sample Rev: 00 Issue NO:

Sample Issue Date: MAY.07 2015 Quantity:

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

2. CHARACTERS:

ITEM	DESCRIPTION
RATED VOLTAGE	48 VDC
OPERATION VOLTAGE	32 - 59 VDC
INPUT CURRENT	2.2 (MAX. 2.7) A SAFETY CURRENT ON LABEL: 2.70A
INPUT POWER	105.82 (MAX. 139.87) W
TYP. POWER RANGE (UNDER BACK PRESSURE)	105.6 ~ 129.6 W
SPEED	10900 ± 10% R.P.M.
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	8.122 (MIN. 7.310) M^3/MIN. 287 (MIN. 258.3) CFM
MAX.AIR PRESSURE (AT ZERO AIRFLOW)	111.764 (MIN. 90.529) mmH_2O 4.400 (MIN. 3.564) inchH_2O
ACOUSTICAL NOISE (AVG.) (FREE AIR)	75 (MAX. 79) dB-A
INSULATION TYPE	UL: CLASS A

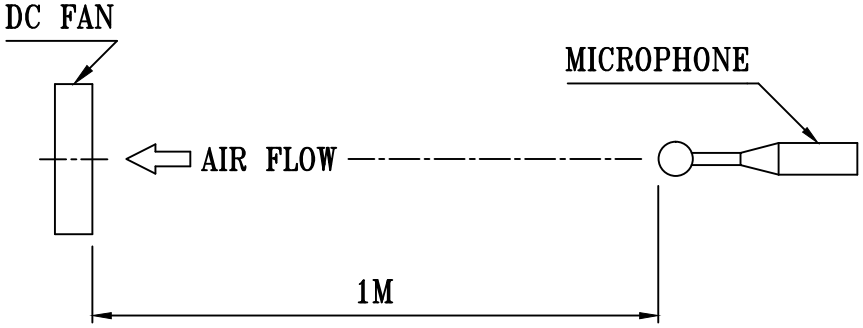
(continued)

PART NO:

DELTA MODEL: THD1248HE

INSULATION STRENGTH	10 MEG OHM MIN. AT 500 VDC (BETWEEN FRAME AND (+) TERMINAL)
DIELECTRIC STRENGTH	5 mA MAX. AT 1000 VAC 50/60 Hz ONE MINUTE, (BETWEEN FRAME AND (+) TERMINAL)
EXTERNAL COVER	OPEN TYPE
LIFE EXPECTANCE (L10) (AT LABEL VOLTAGE)	70,000 HOURS CONTINUOUS OPERATION AT 40 °C WITH 15 ~ 65 %RH.
ROTATION	CLOCKWISE VIEW FROM NAME PLATE SIDE
OVER CURRENT SHUT DOWN	THE CURRENT WILL SHUT DOWN WHEN LOCKING ROTOR
STARTING PROTECTION	START AT LOW SPEED , AFTER 6 SEC RUNNING AT FULL SPEED
LEAD WIRE	UL 1430 -F- AWG #22 BLACK WIRE NEGATIVE (-) RED WIRE POSITIVE (+) BLUE WIRE FREQUENCY (F00) YELLOW WIRE SIGNAL CONTROL (PWM)

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. 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.

PART NO:

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3. MECHANICAL:

3-1. DIMENSIONS ---------- SEE DIMENSIONS DRAWING

3-2. FRAME ---------- DIE-CAST ALUMINUM

3-3. IMPELLER ---------- PLASTIC UL: 94V-0

3-4. BEARING SYSTEM ---------- TWO BALL BEARING

3-5. WEIGHT ---------- 475 GRAMS

3-6. ROTOR WEIGHT ---------- 145 GRAMS

4. ENVIRONMENTAL:

4-1. OPERATING TEMPERATURE ---------- -10 TO +70 DEGREE C

4-2. STORAGE TEMPERATURE ---------- -40 TO +85 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. EOS & ESD PROTECTION

EOS : BE CAPABLE OF WITHSTANDING 60VDC FOR 2MINUTE.
ESD : CLASS 2 (ISO 6100-4-2).

6. RE OZONE DEPLETING SUBSTANCES:

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

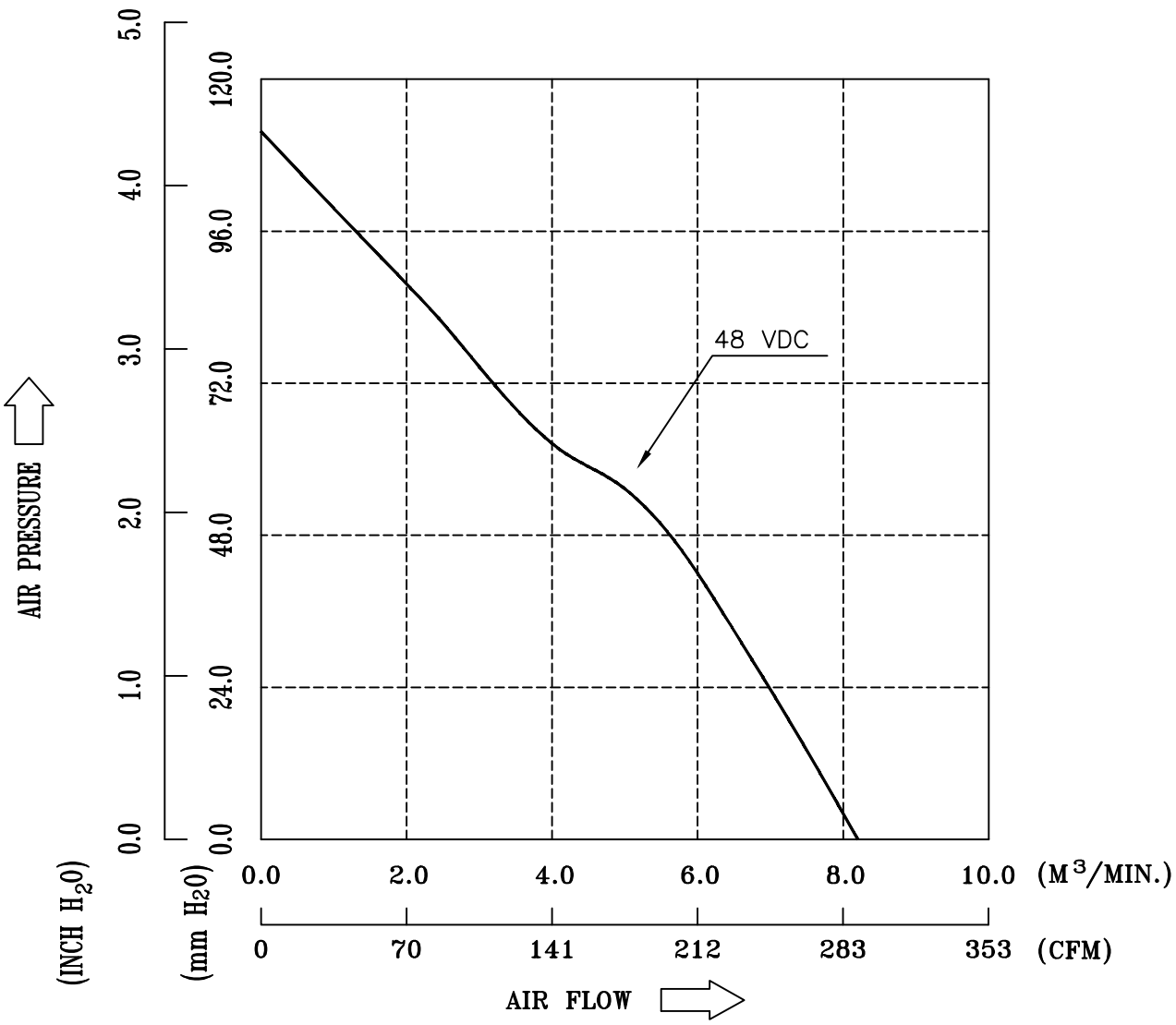
7. PRODUCTION LOCATION

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

PART NO:

DELTA MODEL: THD1248HE

8. P & Q CURVE:



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

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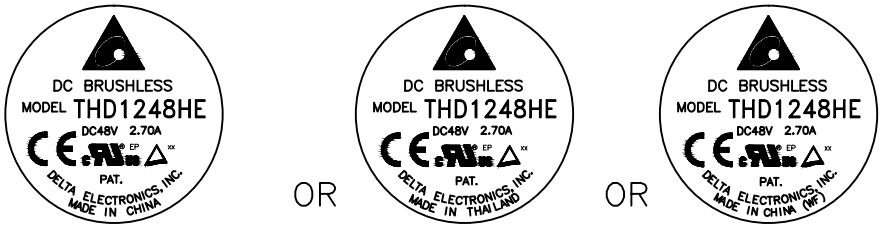
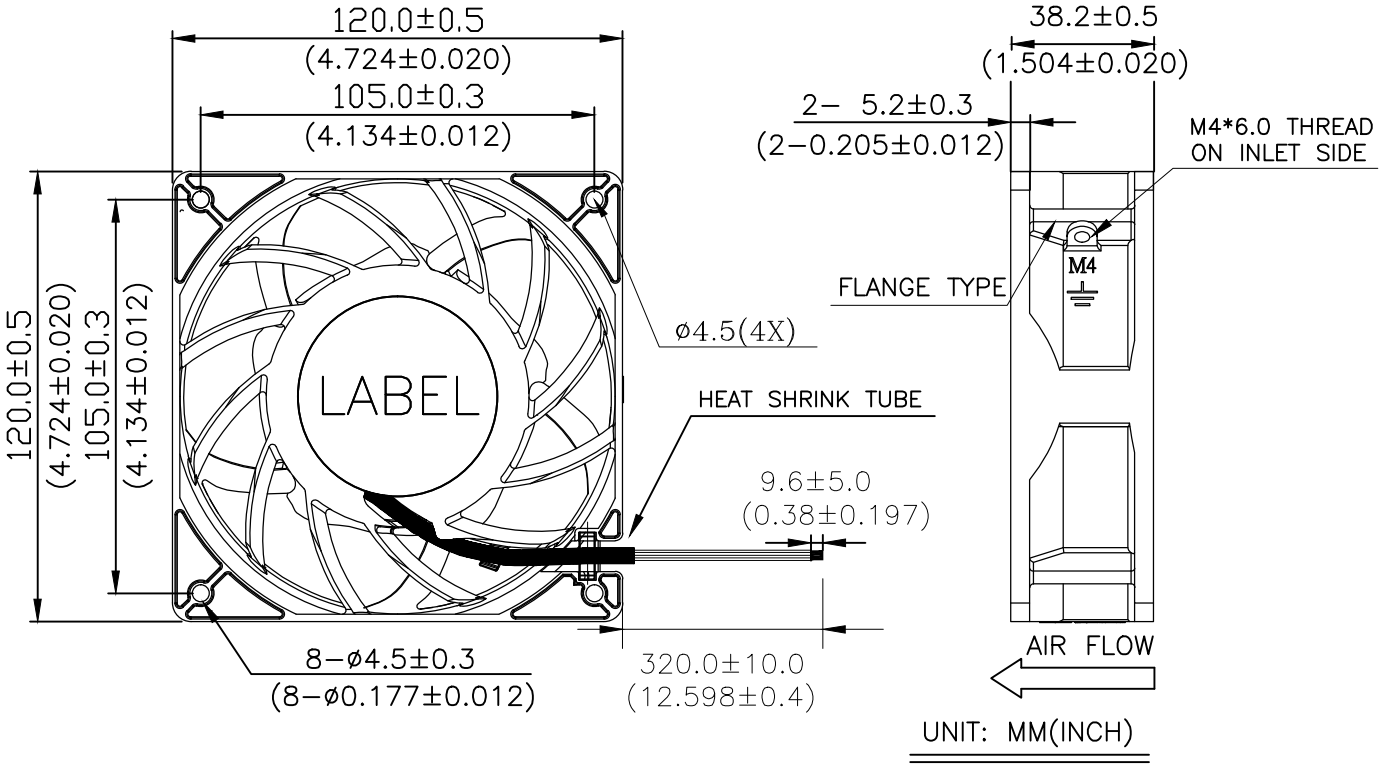
9. DIMENSIONS DRAWING

LABEL : (DATECODE IS SHOWN AT ONE OF APPROX. POSITION AS FOLLOWING DRAWINGS.)



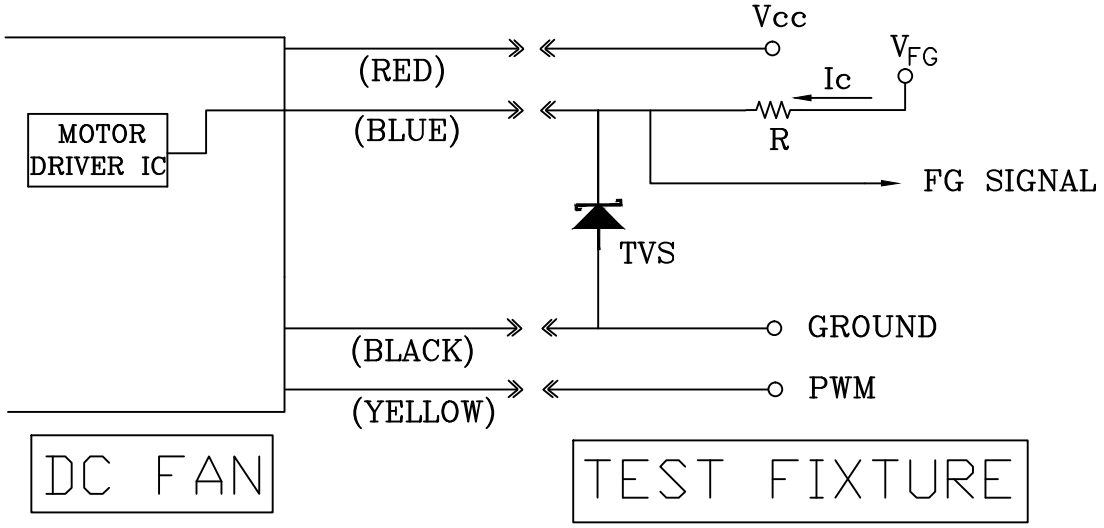


NOTES :

1.LEAD WIRE: UL1430 AWG#22
  RED WIRE---(+)
  YELLOW WIRE----(PWM)
  BLUE WIRE---(FOO)
  BLACK WIRE---(-)
2.THIS PRODUCT IS RoHS COMPLIANT.
3.THE BARCODE IS NOT AVAILABLE ON ENGINEERING SAMPLE.

10. FREQUENCY GENERATOR (FG) SIGNAL:

10-1. OUTPUT CIRCUIT - OPEN COLLECTOR MODE:



REMARK: TVS VOLTAGE DEFINE BY FACTORY.

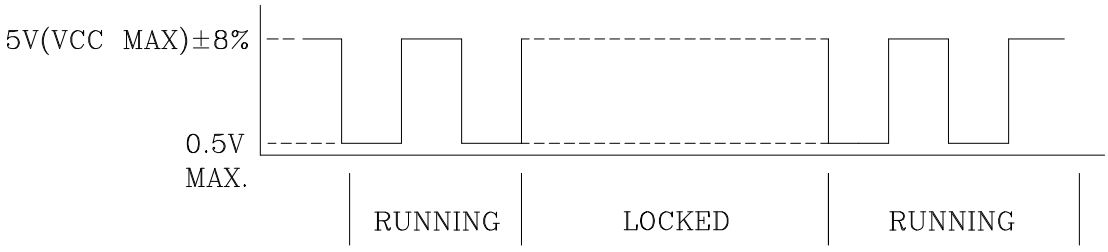
CAUTION: THE FG SIGNAL LEAD WIRE MUST BE KEPT AWAY FROM "+" LEAD WIRE & "−" LEAD WIRE.

10-2. SPECIFICATION:

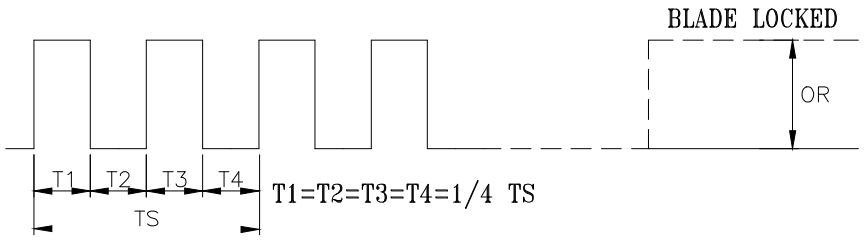
$V_{CE}(sat)$=0.5V MAX V_{FG}=5V TYP (OPERATION VOLTAGE MAX)

I_C =5.2mA MAX. $R \geq V_{FG}/I_C$

10-3. FREQUENCY GENERATOR WAVEFORM:



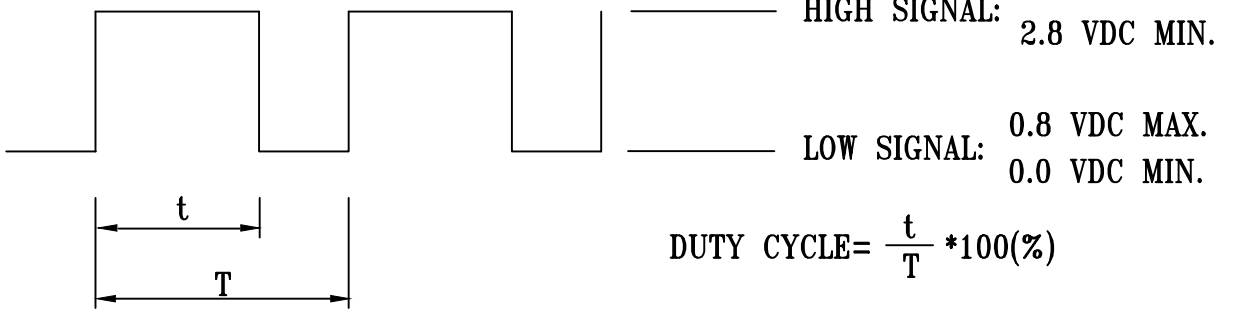
FAN RUNNING FOR 4 POLES



N=R.P.M
TS=60/N(SEC)
*VOLTAGE LEVEL AFTER BLADE LOCKED
*4 POLES

11. PWM CONTROL SIGNAL:

SIGNAL VOLTAGE RANGE:



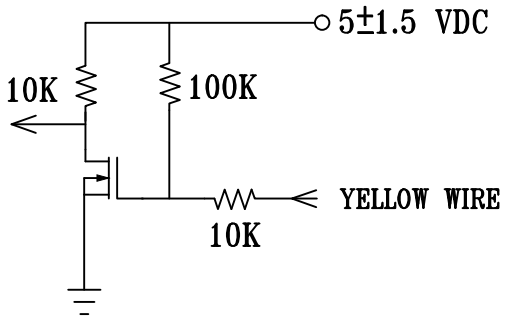
- THE FREQUENCY FOR CONTROL SIGNAL OF THE FAN SHALL BE ABLE TO ACCEPT AT 2KHZ.
- AT 100% DUTY CYCLE, THE ROTOR WILL SPIN AT MAXIMUM SPEED.
- WITH CONTROL SIGNAL LEAD DISCONNECTED, THE FAN WILL SPIN AT MAXIMUM SPEED.
- AT RATED VOLTAGE, 2KHZ 50% DUTY CYCLE, THE FAN WILL BE ABLE TO START FROM A DEAD STOP.

12. SPEED VS PWM CONTROL SIGNAL:

(AT RATED VOLTAGE 48V; PWM SIGNAL WITH 5 VDC TTL; FREQUENCY: 2KHZ; TEMPERATURE: 25C)

DUTY CYCLE (%)	SPEED R.P.M. (REF.)	CURRENT(A)@48V
100	10900	1.82
75	8600	0.955
50	6060	0.375
25	3510	0.125
0	3000	0.1

13. PWM CONTROL LEAD WIRE INPUT IMPEDANCE:



13-1. THE FAN SPEED WILL DEFAULT TO MAXIMUM WHEN THE SPEED CONTROL INPUT IS LEFT UNCONNECTED.

Application Notice

1. Delta will not guarantee the performance of the products if the application condition falls outside the parameters set forth in the specification.
2. A written request should be submitted to Delta prior to approval if deviation from this specification is required.
3. 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 fan was hard-dropped to the production floor.
4. 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 of water or encroachment of insect into the hub.
5. The above-mentioned conditions are representative of some unique examples and viewed as the first point of reference prior to all other information.
6. 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, if there is no foolproof method to protect against such error specifically mentioned in this spec.
7. Delta fans without special protection are not suitable where any corrosive fluids are introduced to their environment.
8. 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.
9. 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 room (ambient) temperature and relative humidity conditions of 25°C, 65% RH. The test value is only for fan performance itself.
13. Be certain to connect an " 4.7μF or greater" capacitor to the fan externally when the application calls for using multiple fans in parallel, to avoid any unstable power.