SPECIFICATION FOR APPROVAL

Customer :

Description : DC FAN

Customer Part No. REV. :

Delta Model No. : TAA0412DDX01DZL REV. : 00

Sample Issue No. :

Sample Issue Date : Mar.26 2018

PLEASE SEND ONE COPY OF THIS SPECIFICAITON 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
FAX:886-(0)3-3591991

*** SAMPLE HISTORY***

CUSTOMER:

CUSTOMER P/N:

DELTA MODEL: TAA0412DDX01DZL

REV.	DESCRIPTION	DRAWN	CHECKED			APPROVED	ISSUE DATE
			ME	EE	CE		
00	ISSUE SPEC	TH.FAN 范庭瑄 03/13'18	TH.FAN 范庭瑄 03/13'18	GENYIE.LIU 劉正毅 03/13'18	---	李健銘 陳建樺 03/13'18	03/26'18

Delta Electronics, Inc.
No.252, Shanying Rd., Guishan Dist.,
Taoyuan City 333, Taiwan (R.O.C.)

TEL : 886-(0)3-3591968
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STATEMENT OF DEVIATION

■ NONE
□ DESCRIPTION:

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Specification For Approval

Customer :

Description : DC FAN

Customer P/N : rev. :

Delta model no. : TAA0412DDX01DZL Delta Safety Model No.: TAA0412DDX01

Sample revision. : 00 Issue no.:

Sample issue date : MAR.26 2018 Quantity :

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

2. CHARACTERS:

ITEM	DESCRIPTION
RATED VOLTAGE	12.0 VDC
OPERATION VOLTAGE	7.0 - 15.0 VDC
INPUT CURRENT(AVG.)	0.55 (MAX. 0.75) A (SAFETY CURRENT ON LABEL :0.90A)
INPUT POWER(AVG)	6.6 (MAX. 9.0) W
SPEED	18000 ± 10% R.P.M.
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	0.63 (MIN. 0.55) M3 /MIN. 22.16 (MIN. 19.50) CFM
MAX. AIR PRESSURE (AT ZERO AIRFLOW)	46.00 (MIN. 36.80) mmH2O 1.81 (MIN. 1.45) inchH_2O
ACOUSTICAL NOISE (AVG.)	56.5 (MAX. 60.5) dB-A
INSULATION TYPE	UL: CLASS A
INSULATION STRENGT	10 MEG OHM MIN. AT 500 VDC (BETWEEN FRAME AND (+) TERMINAL)
DIELECTRIC STRENGTH	5 mA MAX. AT 500 VAC 50/60 Hz ONE MINUTE, (BETWEEN FRAME AND (+) TERMINAL)

(continued)

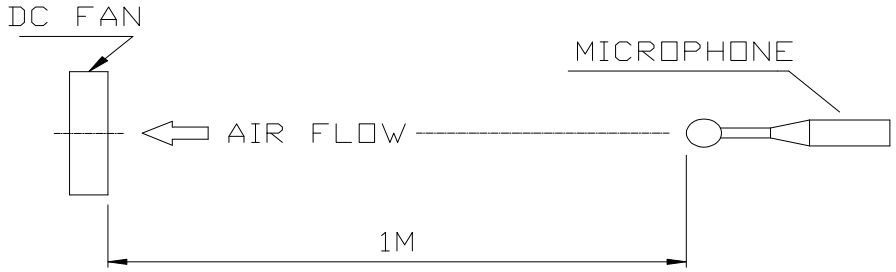
PART NO:

DELTA MODEL: TAA0412DDX01DZL

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
LOCKED CURRENT SHUT DOWN	THE CURRENT WILL SHUT DOWN WHEN ROTOR LOCKED AND FIXED.

NOTES:

1. ALL READINGS ARE MEASURED AFTER STABLY WARMING UP THROUGH 10 MINUTES.
2. STANDARD AIR PROPERTY IS AIR AT (Td) 25℃ TEMPER ATURE, (RH) 65% RELATIVE HUMIDITY , AND (Pb) 760 mmHg BAROMETRIC PRESSURE.
3. THE VALUES WRITTEN IN PARENS , ( ), ARE LIMITED SPEC.
4. ACOUSTICAL NOISE MEASURING CONDITION:



DOISE 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:

DELTA MODEL: TAA0412DDX01DZL

3.MECHANICAL:

3-1. DIMENSIONS---------- SEE DIMENSIONS DRAWING
3-2. FRAME----------PLASTIC UL: 94V-0
3-3. IMPELLER----------PLASTIC UL: 94V-0
3-4. BEARING SYSTEM----------TWO BALL BEARINGS
3-5. WEIGHT----------25 REF GRAMS
3-5-1. ROTOR WEIGHT----------9.5 REF GRAMS
3-6. CORROSION PROTECTION----------ADD GLUE ON PAD OF PCBA
3-7. INGRESS PROTECTION RATE----------IP51

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.

6. RE OZONE DEPLETING SUBSTANCES:

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

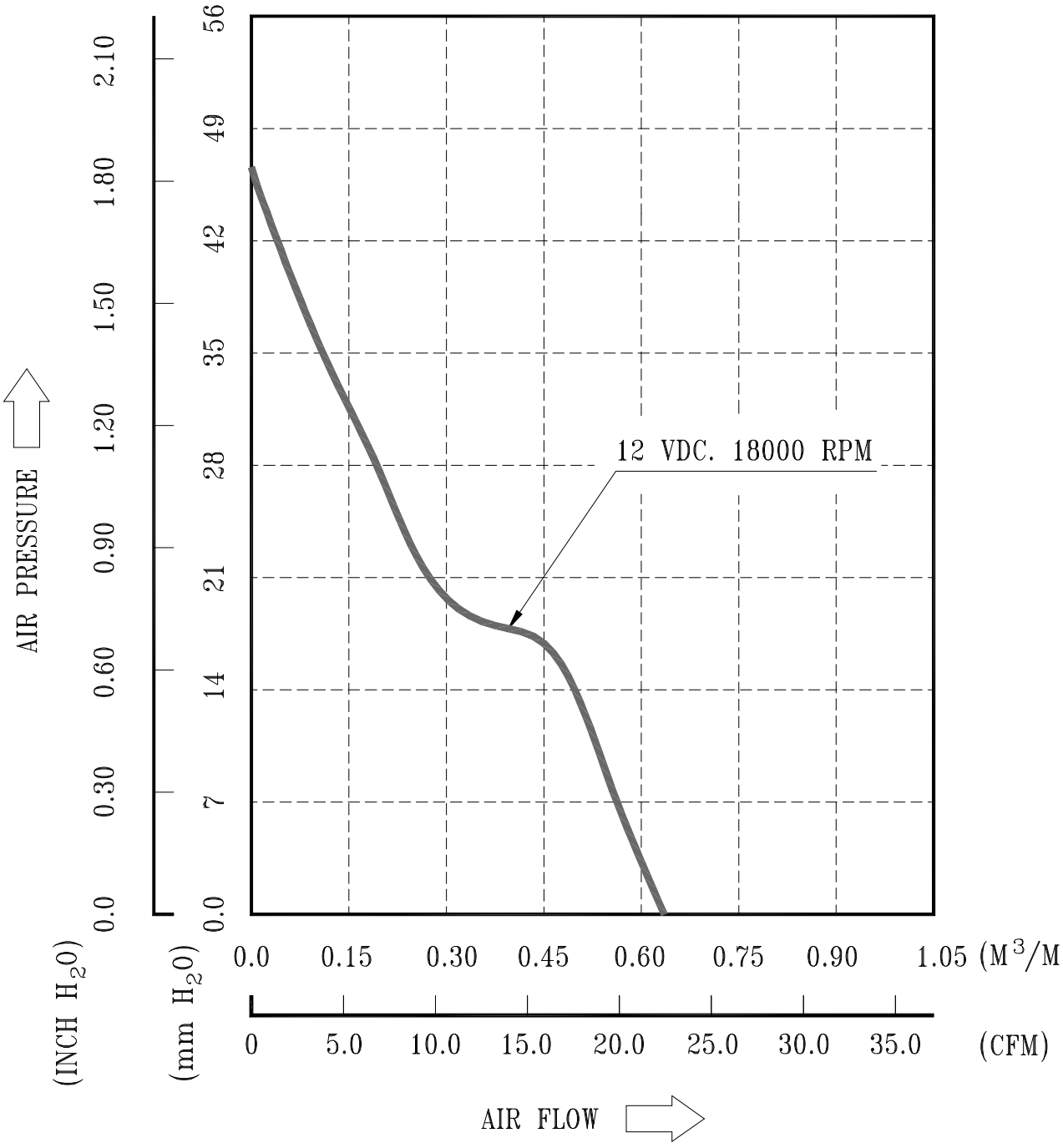
7. PRODUCTION LOCATION

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

PART NO:

DELTA MODEL: TAA0412DDX01DZL

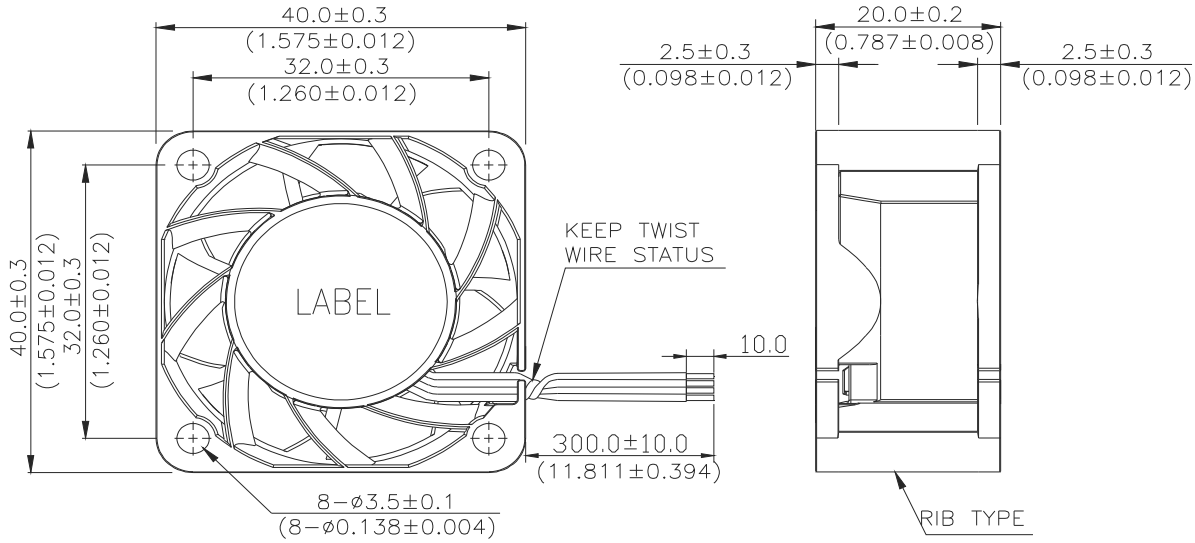
8. P & Q CURVE:



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

9. DIMENSION DRAWING:

LABEL:



UNIT: mm(INCH)

NOTES:

1.CABLE WIRE UL:1430 AWG#26

1: RED WIRE----(+)

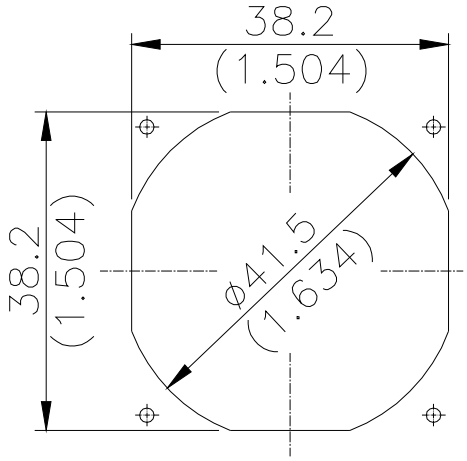
2: YELLOE WIRE----(PWM)

3: BLUE WIRE----(FOO)

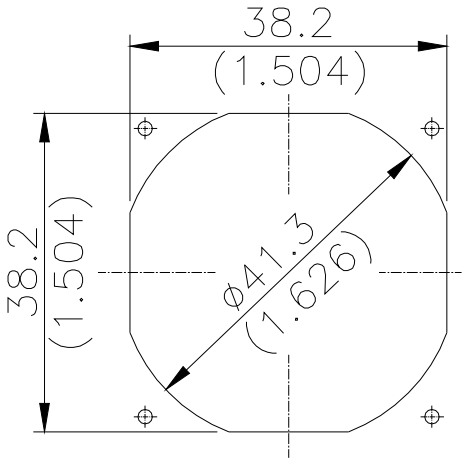
4: BLACK WIRE----(−)

2.THIS PRODUCT IS RoHS COMPLIANT

10. MOUNTING PANEL CUTOUT:



OUTLET SIDE



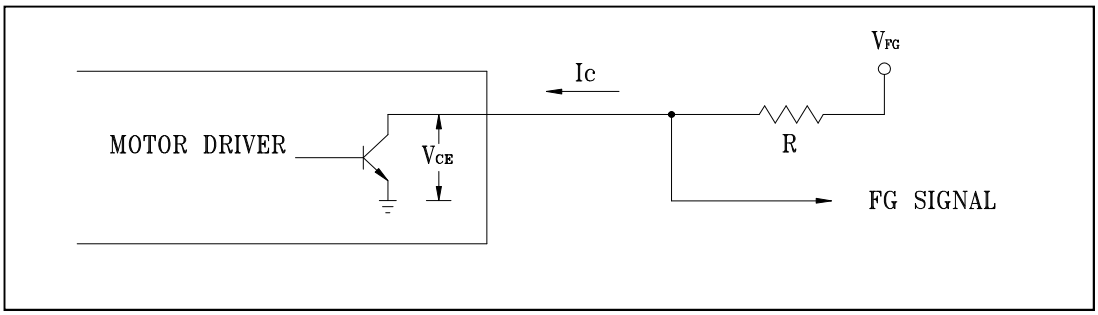
INLET SIDE

PART NO:

DELTA MODEL: TAA0412DDX01DZL

11.FREQUENCY GENERATOR (FG) SIGNAL:

1. OUTPUT CIRCUIT - OPEN COLLECTOR MODE:



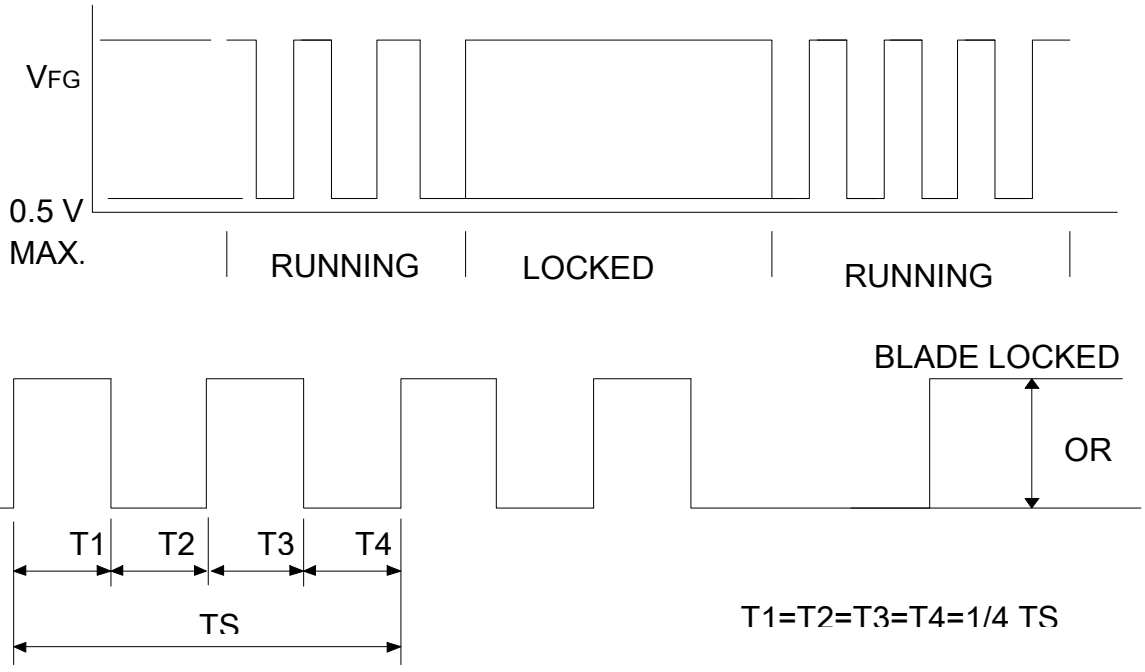
CAUTION:

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

2. SPECIFICATION:

V_{FG}=15.0V MAX. Ic = 5mA MAX.
$V_{CE(sat)}$= 0.5V MAX. R ≧ V_{FG} /Ic

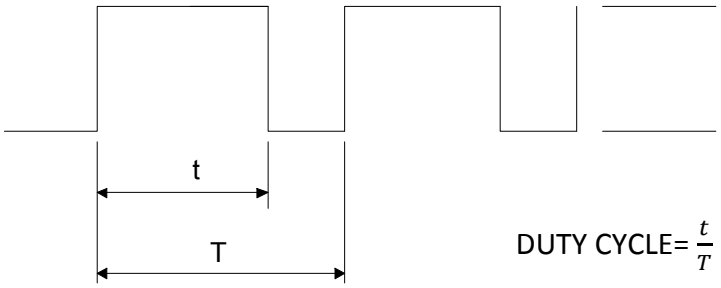
3. FREQUENCY GENERATOR WAVEFORM:



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

12.PWM CONTROL SIGNA (AT 12.0VDC ; 25DEGREE C)

SIGNAL VOLTAGE RANGE: -0.8~20 VDC



HIGH SIGNAL: 20.0 VDC MAX. 2.8 VDC MIN.

LOW SIGNAL: 0.4 VDC MAX. -0.8 VDC MIN.

DUTY CYCLE= $\frac{t}{T}$ *100(%)

*THE FREQUENCY FOR CONTROL SIGNAL OF THE FAN SHALL BE ABLE TO ACCEPT A 600HZ~30KHZ.

*THE PREFERRED OPERATING POINT FOR THE FAN IS 1K HZ.

*AT 100% DUTY CYCLE,THE ROTOR WILL SPIN AT MAXIMUM SPEED.

*AT 0% DUTY CYCLE,THE ROTOR WILL STOP.

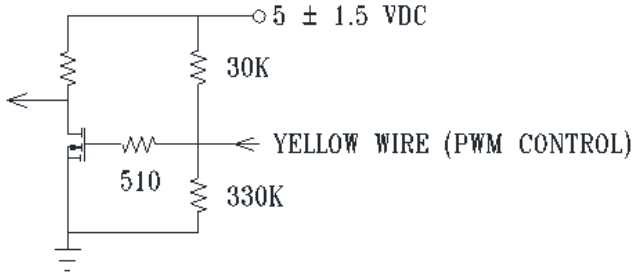
*WITH CONTROL SIGNAL LEAD DISCONNECTED,THE FAN WILL SPIN AT MAXIMUM SPEED.

*AT 12VDC 1KHZ 30% DUTY CYCLE ,THE FAN WILL BE ABLE TO START FROM A DEAD STOP .

13. SPEED VS PWM CONTROL SIGNA (AT 12VDC & F=1KHZ & TEMP=25DEG.C)

DUTY CYCLE (%)	SPEED R.P.M. (REF.)	CURRENT (A) TYP.
100	18000±10%	0.55
50	9000±10%	0.12
0	0	0.02

14. PWM CONTROL LEAD WIRE INPUT IMPEDANCE:



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. lt 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.