Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

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Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

SPECIFICATION FOR APPROVAL

Customer. _____

Description. DC FAN

Part No. _____ REV. _____

Delta Model No. GFM0412SS-BL4F REV. 01

Sample Issue No. _____

Sample Issue Date. FEB.23 2017

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.
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STATEMENT OF DEVIATION

****

■ NONE

□ DESCRIPTION :

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TAOYUAN HSIEN 333, TAIWAN, R. O. C.
TEL : 886-(0)3-3591968
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SPECIFICATION FOR APPROVAL
****

Customer: STD

Description: DC FAN

Customer P/N: REV:

Delta Model NO.: GFM0412SS-BL4F **Delta Safety Model No:** GFM0412SS

Sample Rev: 01 Issue NO:

Sample Issue Date: Quantity:

1. SCOPE:

THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE DC BRUSHLESS AXIAL FLOW FAN. THE FAN MOTOR IS WITH 3 PHASES.

2. CHARACTERS:

ITEM	DESCRIPTION	
RATED VOLTAGE	12 VDC	
OPERATION VOLTAGE	10.8 - 12.6 VDC	
INPUT CURRENT	0.80 (MAX. 1.00) A	
INPUT POWER	9.60 (MAX. 12.00) W	
SPEED AT 100%	INLET (40x30)	OUTLET (40x26)
	17200 R.P.M.	14000 R.P.M.
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	0.767 (MIN. 0.690) M^3/MIN. 27.07 (MIN. 24.36) CFM	
MAX. AIR PRESSURE (AT ZERO AIRFLOW)	56.64 (MIN. 45.88) mmH_2O 2.230 (MIN. 1.806) $inchH_2O$	
ACOUSTICAL NOISE (AVG.)	61.5 (MAX. 65.5) dB-A	
INSULATION TYPE	UL: CLASS A	
SAFETY CURRENT ON LABEL	1.82 A	

(continued)

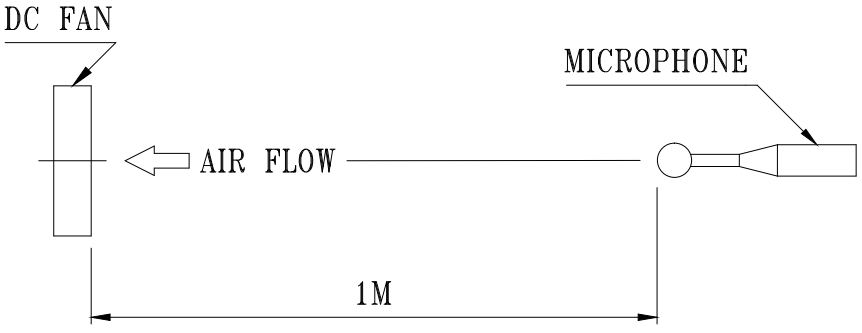
PART NO:

DELTA MODEL: GFM0412SS-BL4F

INSULATION STRENGTH	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)
EXTERNAL COVER	OPEN TYPE
	70000 HOURS CONTINUOUS OPERATION AT 40 °C WITH 15 ~ 65 %RH.
ROTATION	TWO FANS ROTATE IN COUNTER DIRECTIONS SHOWED IN THE NAME PLATE SIDE
OVER CURRENT SHUT DOWN	THE CURRENT WILL SHUT DOWN WHEN LOCKING ROTOR.
LEAD WIRE	UL 1061 -F- AWG #28 INLET FAN BLACK WIRE NEGATIVE (-) RED WIRE POSITIVE (+) BLUE WIRE LOW SPEED ALARM SIGNAL(F00) YELLOW WIRE SPEED CONTROL (PWM) OUTLET FAN GRAY WIRE NEGATIVE (-) ORANGE WIRE POSITIVE (+) WHITE WIRE LOW SPEED ALARM SIGNAL (F00) GREEN WIRE SPEED 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:

5. THE CHARACTERS SHOWED IN PAGE 1 IS THE CONDITION OF BOTH FANS RUN.



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:

DELTA MODEL: GFM0412SS-BL4F

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 ---------- 83 GRAMS

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. INTERNAL FUSE IMPLEMENTED

6. RE OZONE DEPLETING SUBSTANCES:

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

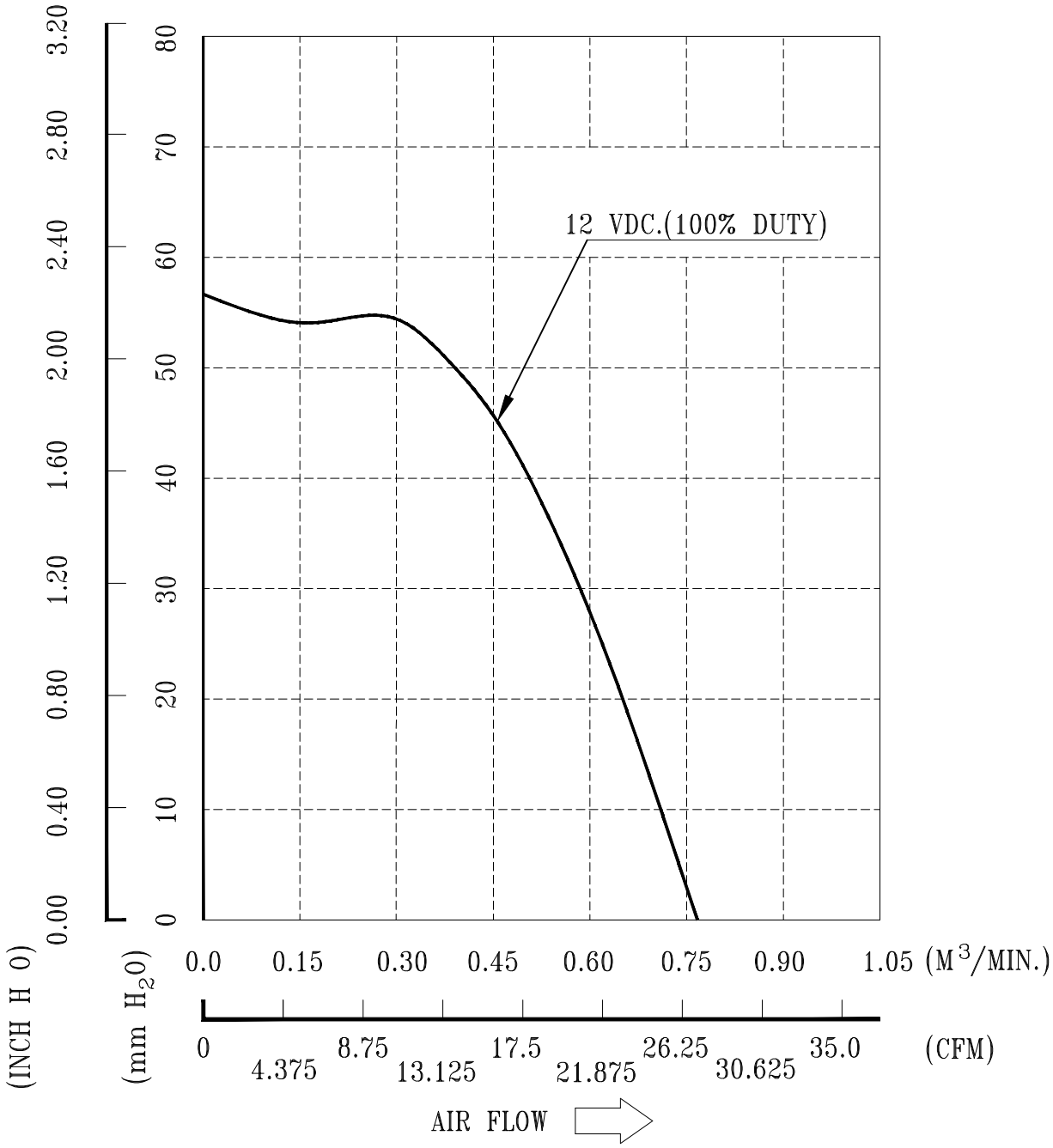
7. PRODUCTION LOCATION

7-1. PRODUCTS WILL BE PRODUCED IN CHINA ONLY.

PART NO:

DELTA MODEL: GFM0412SS-BL4F

8. P & Q CURVE FOR FAN UNIT:



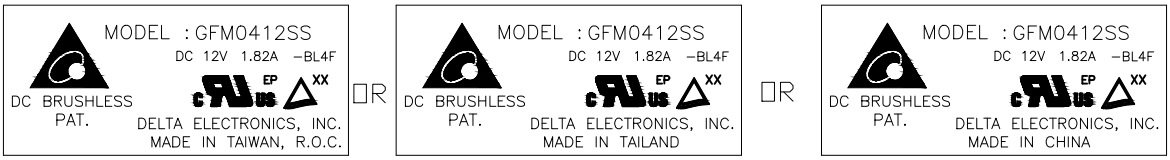
* TEST CONDITION: INPUT VOLTAGE ------- OPERATION VOLTAGE
TEMPERATURE -------- ROOM TEMPERATURE
HUMIDITY ---------- 65%RH

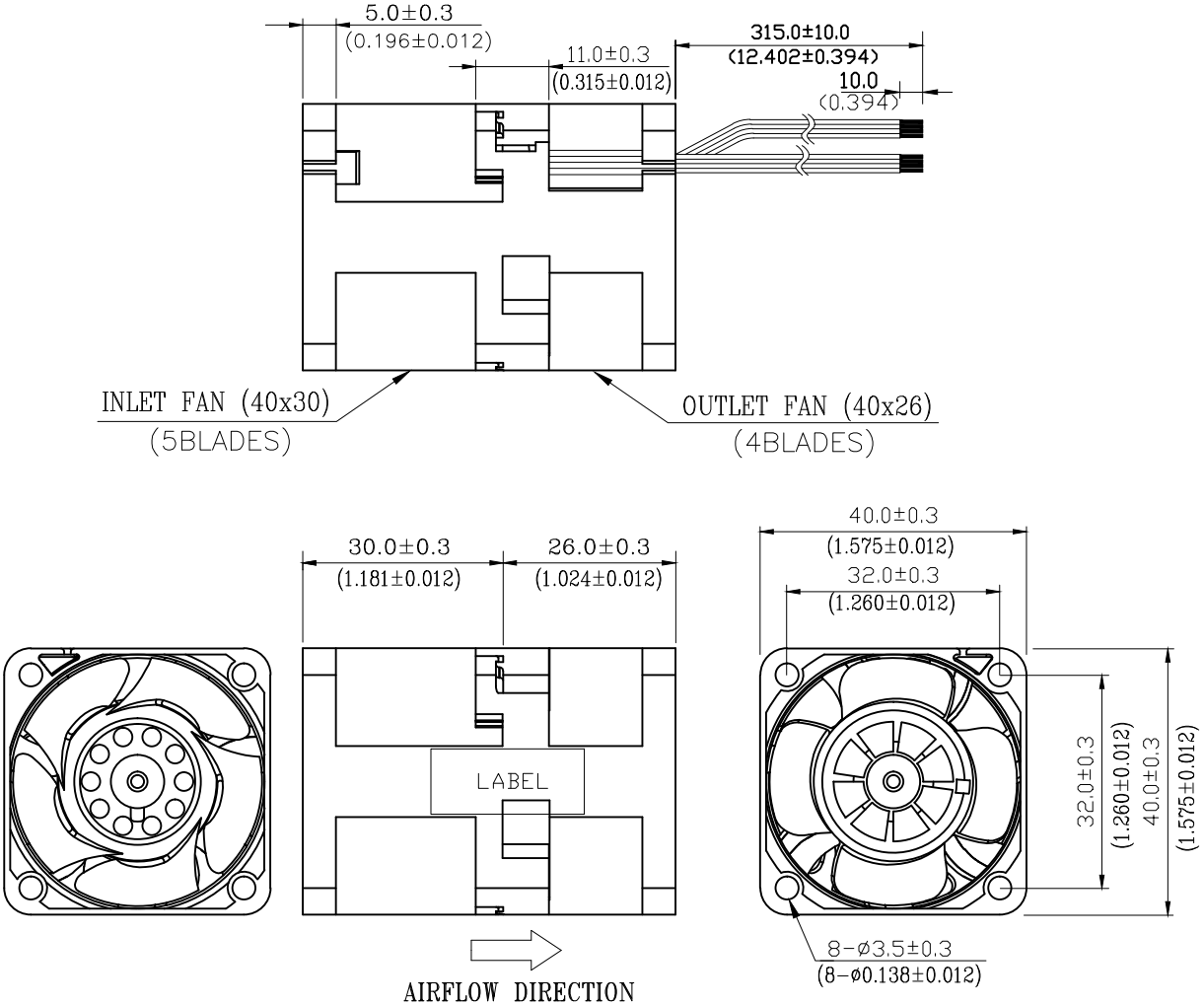
PART NO:

DELTA MODEL: GFM0412SS-BL4F

9. DIMENSION DRAWING FOR UNIT FAN:

LABEL:





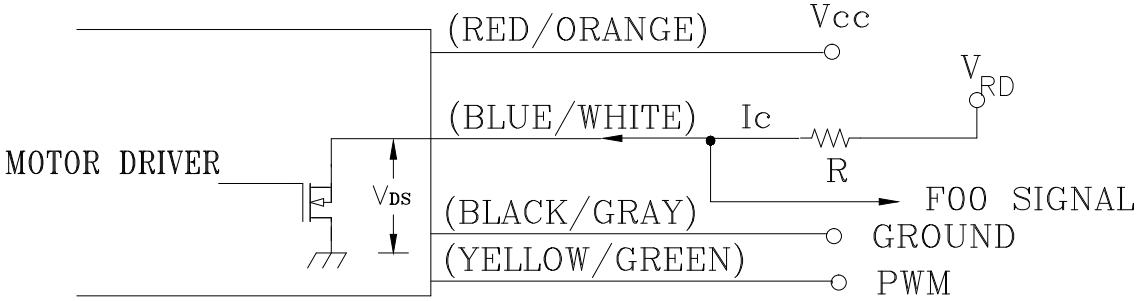
NOTES:

DIMENSION UNIT: MM(INCH)

1. LEAD WIRE: UL 1061 -F- AWG #28
   - RED WIRE -------(+) INLET FAN
   - BLACK WIRE -----(-) INLET FAN
   - BLUE WIRE ------ (F00) INLET FAN
   - YELLOW WIRE --------(PWM) INLET FAN
   - ORANGE WIRE -------(+) OUTLET FAN
   - GRAY WIRE ------(-) OUTLET FAN
   - WHITE WIRE --------(F00) OUTLET FAN
   - GREEN WIRE ------(PWM) OUTLET FAN
2. THIS PRODUCT IS RoHS COMPLIANT

10. ROTATION DETECTOR (RD) SIGNAL:

10-1. OUTPUT CIRCUIT - OPEN COLLECTOR MODE:



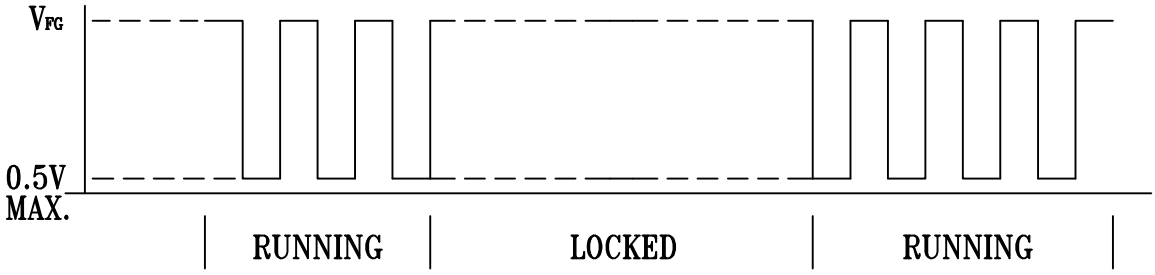
CAUTION:
THE LEAD WIRE OF RD SIGNAL CAN NOT TOUCH
THE LEAD WIRE OF POSITIVE OR NEGATIVE.

10-2. SPECIFICATION:

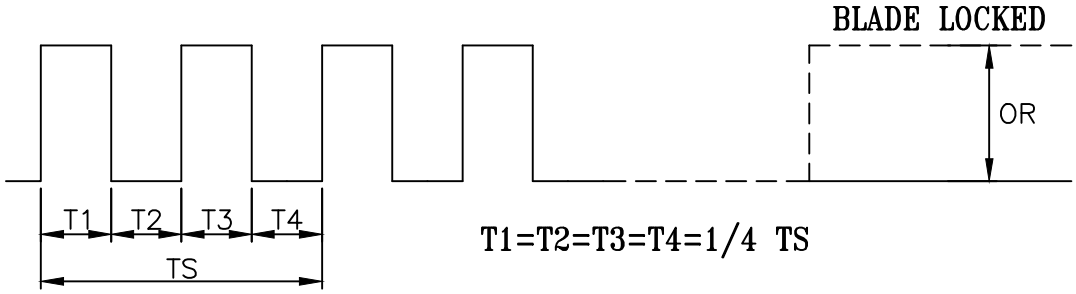
V_{FG} = 12.6V MAX. I_D = 5mA MAX.

V_{DS} = 0.5V MAX. $R \geq V_{FG}/I_D$

11. FREQUENCY GENERATOR WAVEFORM:



FAN RUNNING FOR 4 POLES

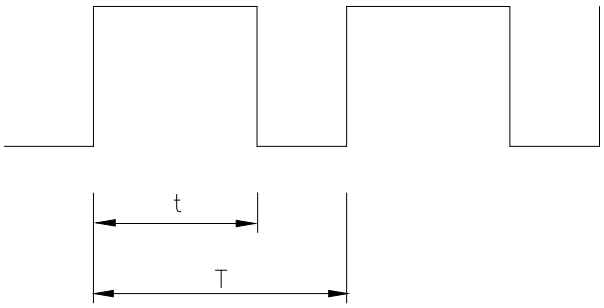


T1=T2=T3=T4=1/4 TS

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

12. PWM CONTROL SIGNAL :

SIGNAL VOLTAGE RANGE: -0.3~6.0VDC



HIGH SIGNAL: 6.0 VDC MAX. 2.0 VDC MIN.

LOW SIGNAL: 1.0 VDC MAX. -0.3 VDC MIN.

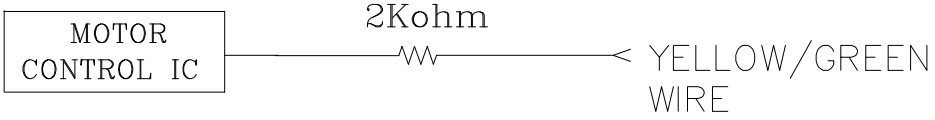
DUTY CYCLE= $\frac{t}{T}$ *100(%)

- THE FREQUENCY FOR CONTROL SIGNAL OF THE FAN SHALL BE ABLE TO ACCEPT A 20KHZ~30KHZ.
- THE PREFERRED OPERATING POINT FOR THE FAN IS 25K HZ.
- AT 100% DUTY CYCLE,THE ROTOR WILL SPIN AT MAXIMUM SPEED.
- AT 0% DUTY CYCLE,THE ROTOR WILL SPIN AT MINIMUM SPEED.
- WITH CONTROL SIGNAL LEAD DISCONNECTED,THE FAN WILL SPIN AT MAXIMUM SPEED.

13. SPEED VS PWM CONTROL SIGNAL: (AT RATED VOLTAGE & PWM FRUQUENCY=25KHZ)

DUTY CYCLE (%)	SPEED R.P.M.(F)	SPEED R.P.M.(R)	CURRENT (A) TYP.
100	17200±10%	14000±10%	0.80
0	1900±350	1400±350	0.05

14. PWM CONTROL LEAD WIRE INPUT IMPEDANCE:



14-1. 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.