



## SPECIFICATION FOR APPROVAL

Customer STD

Description DC FAN

Part No. \_\_\_\_\_ REV. \_\_\_\_\_

Delta Model No. AFC1212D-SP19 REV. 00

Sample Issue No. \_\_\_\_\_

Sample Issue Date DEC.28.2007

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

APPROVED BY: \_\_\_\_\_

DATE : \_\_\_\_\_

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SPECIFICATION FOR APPROVAL  
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Customer:	STD	
Description:	DC FAN	
Customer P/N:		REV:
Delta Model NO.:	AFC1212D-SP19	
Sample Rev:	00	Issue NO:
Sample Issue Date:	DEC.28.2007	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 VDC
OPERATION VOLTAGE	10.8 - 12.6 VDC
INPUT CURRENT	0.32 (MAX. 0.60) A
INPUT POWER	3.84 (MAX. 7.20) W
SPEED	3000 R.P.M. (REF.)
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	2.540 ( MIN. 2.289) M <sup>3</sup> /MIN. 89.703 ( MIN. 80.732) CFM
MAX. AIR PRESSURE (AT ZERO AIRFLOW)	8.591 ( MIN. 6.958) mmH <sub>2</sub> O 0.338 ( MIN. 0.274) inchH <sub>2</sub> O
ACOUSTICAL NOISE (AVG.)	46.0 (MAX. 50.0) dB-A
INSULATION TYPE	UL: CLASS A

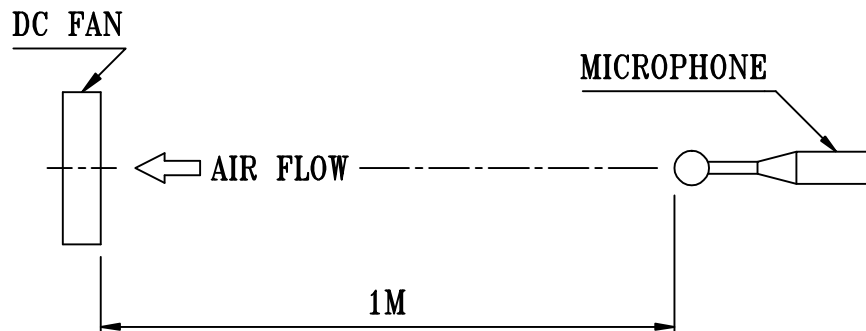
(continued)

PART NO:

DELTA MODEL: AFC1212D-SP19

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
LIFE EXPECTANCE	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.
LEAD WIRE	UL 1061 -F- AWG #24 BLACK WIRE NEGATIVE(-) RED WIRE POSITIVE(+) YELLOW WIRE SPEED CONTROL(PWM) BLUE WIRE FREQUENCY(F00)

- NOTES: 1. ALL READINGS ARE MEASURED AFTER STABLY WARMING UP THROUGH 10 MINUTES.  
2. THE VALUES WRITTEN IN PARENS , ( ), ARE LIMITED SPEC.  
3. 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 ----- PLASTIC UL: 94V-0
- 3-3. IMPELLER ----- PLASTIC UL: 94V-0
- 3-4. BEARING SYSTEM ----- TWO BALL BEARINGS
- 3-5. WEIGHT ----- 228 GRAMS

4. ENVIRONMENTAL:

- 4-1. OPERATING TEMPERATURE ----- -10 TO +60 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 OR TAIWAN.

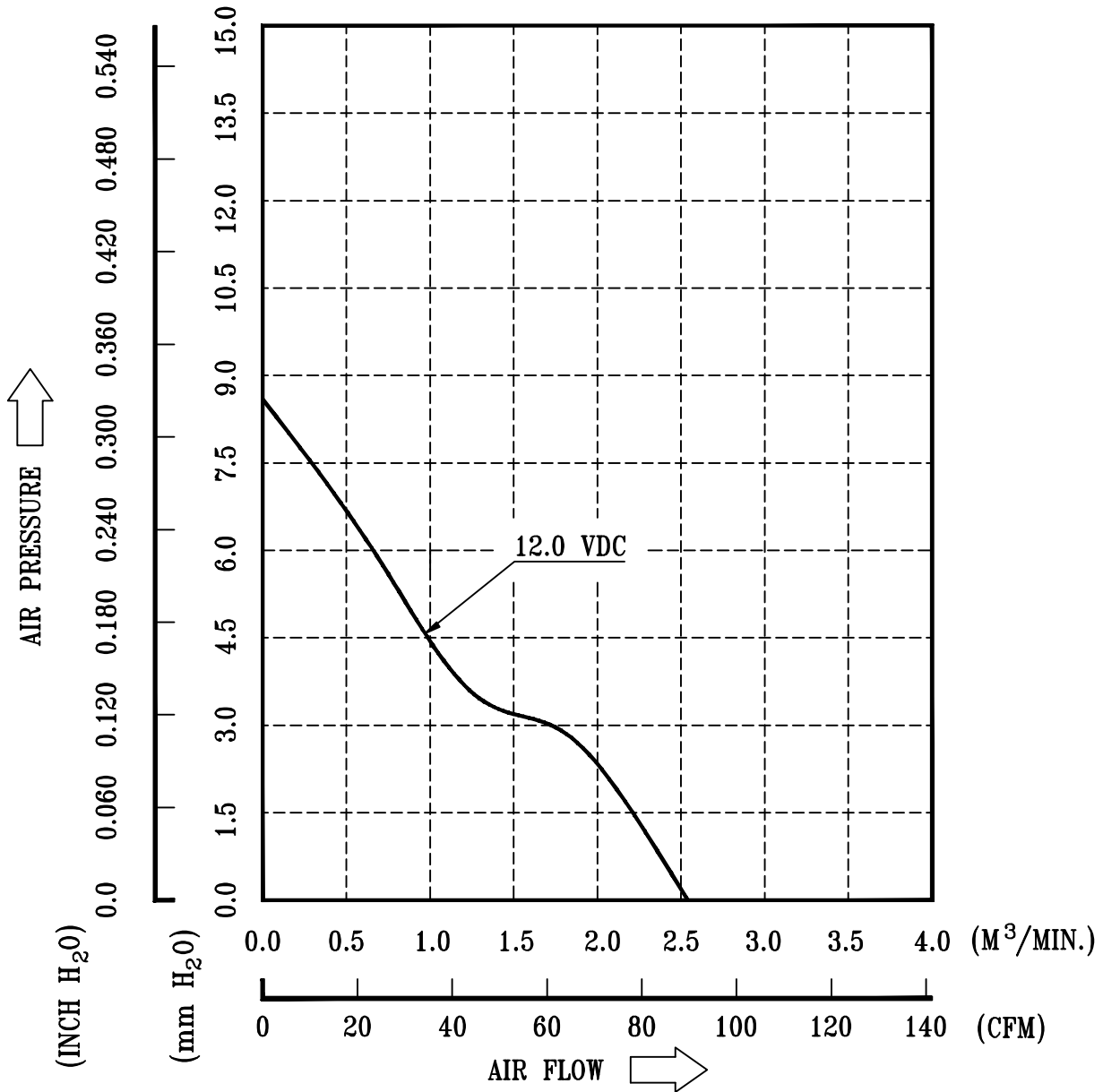
8. CURRENT CHARACTERISTIC

- 8-1. THE IN-RUSH CURRENT MAXIMUM IS 13.17 A AND CONTINUE 11.3u SECOND .
- 8-2. THE PEAK CURRENT MAXIMUM IS 0.85 A .

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9. P & Q CURVE:



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

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10. DIMENSION DRAWING:

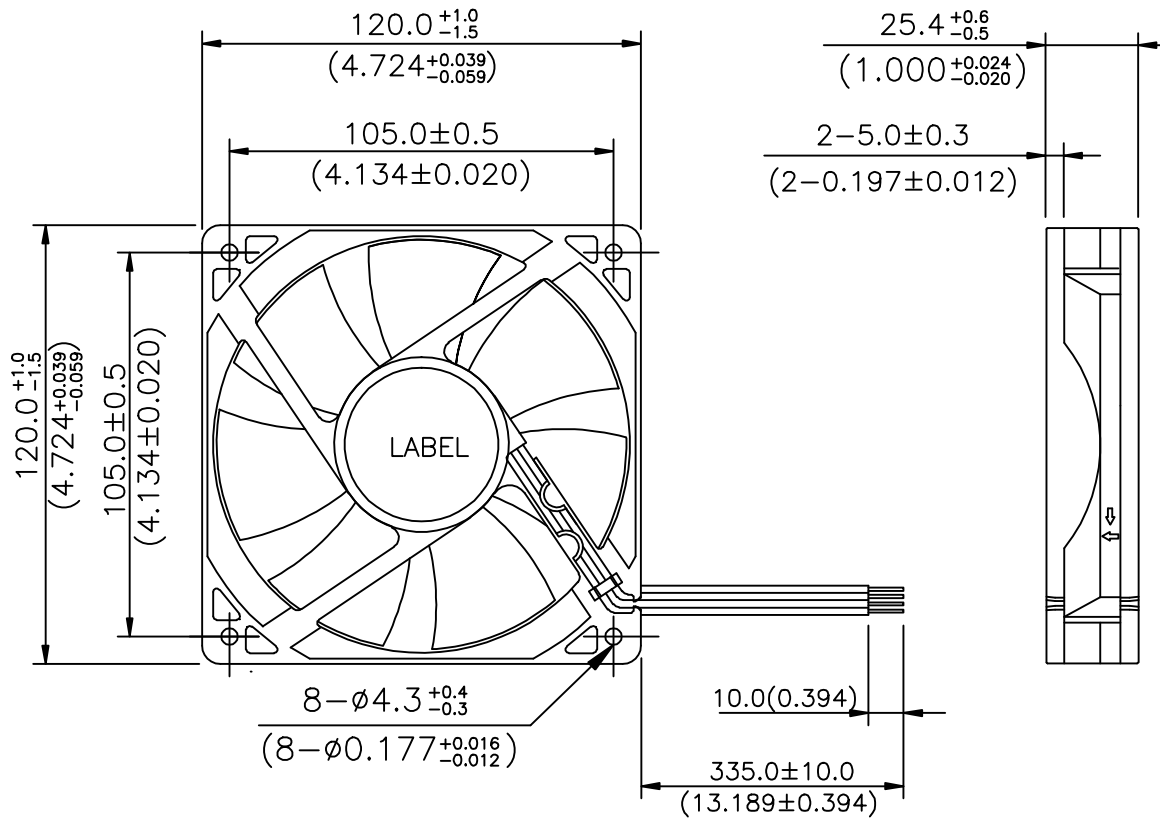
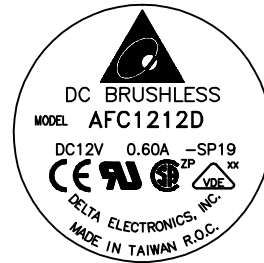
LABEL:



OR



OR



NOTES:

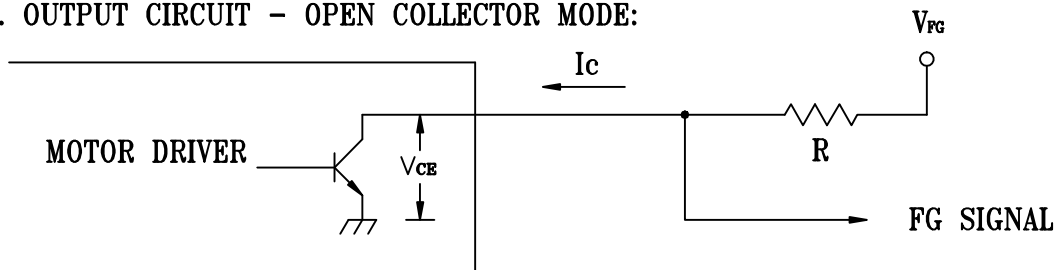
1. LEAD WIRE: UL1061 AWG#24  
YELLOW WIRE ----- (PWM)  
RED WIRE ----- (+)  
BLACK WIRE ----- (-)  
BLUE WIRE ----- (F00)
2. THIS PRODUCT IS RoHS COMPLIANT.

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11. FREQUENCY GENERATOR (FG) SIGNAL:

1. OUTPUT CIRCUIT - OPEN COLLECTOR MODE:



CAUTION:

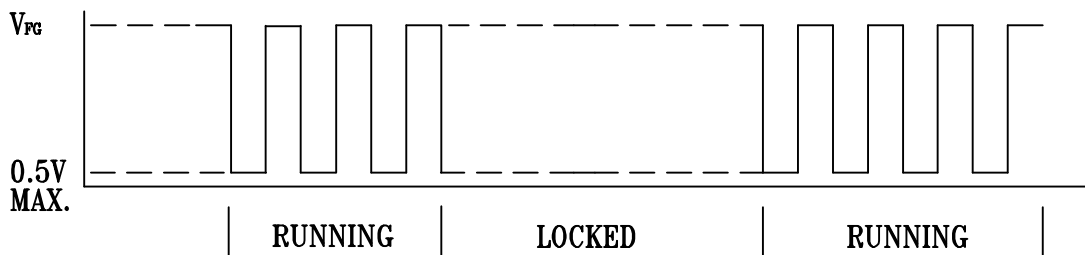
THE LEAD WIRE OF FG SIGNAL CAN NOT TOUCH  
THE LEAD WIRE OF POSITIVE OR NEGATIVE.

2. SPECIFICATION:

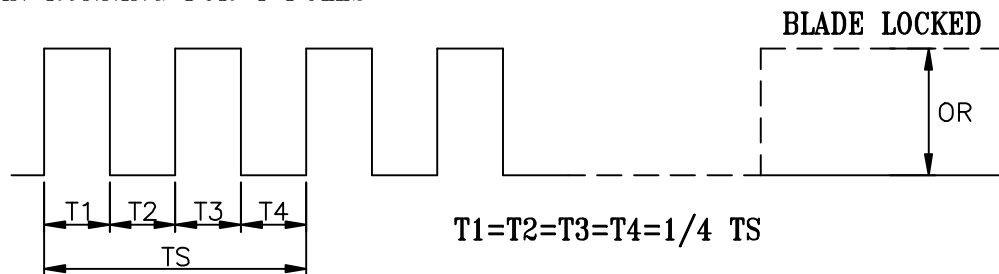
$V_{ce(sat)} = 0.5V \text{ MAX.}$        $V_{FG} = 12.6VDC \text{ MAX.}$

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

3. FREQUENCY GENERATOR WAVEFORM:



FAN RUNNING FOR 4 POLES



$T1=T2=T3=T4=1/4 \text{ TS}$

$N=R.P.M$

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

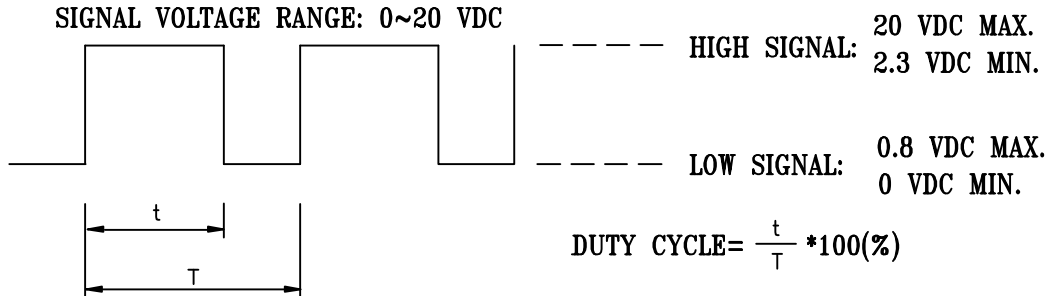
\*VOLTAGE LEVEL AFTER BLADE LOCKED

\*4 POLES

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12. PWM CONTROL SIGNAL:

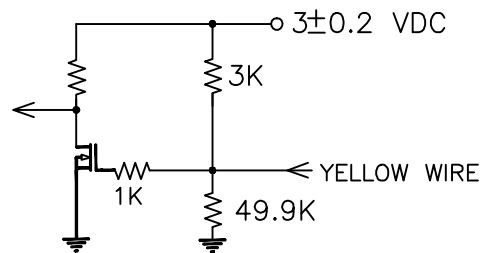


- THE FREQUENCY FOR CONTROL SIGNAL OF THE FAN SHALL BE ABLE TO ACCEPT A 30HZ~300KHZ.
- THE PREFERRED OPERATING POINT FOR THE FAN IS 25KHZ.
- AT 100% DUTY CYCLE,THE ROTOR WILL SPIN AT MAXIMUM SPEED.
- AT 0% DUTY CYCLE,THE ROTOR WILL SPIN AT MINIMUM SPEED.
- WITH CONTROL SIGNAL LEAD DISCONNECTED,THE FAN WILL SPIN AT MAXIMUM SPEED.
- AT 25KHZ 30% DUTY CYCLE ,THE FAN WILL BE ABLE TO START FROM A DEAD STOP .

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

DUTY CYCLE (%)	SPEED R.P.M. (REF.)	CURRENT (A) TYP.
100	3000 ± 10%	0.32
70	2340 ± 10%	0.18
40	1680 ± 10%	0.10
20	1240 ± 200	0.06
0	800 ± 200	0.04

14. PWM CONTROL LEAD WIRE INPUT IMPEDANCE:



- 14-1. THE FAN SPEED WILL DEFAULT TO MAXIMUM WHEN THE SPEED CONTROL INPUT IS LEFT UNCONNECTED.