



SPECIFICATION FOR APPROVAL

Customer _____

Description DC FAN

Part No. _____ **Rev.** _____

Delta Model No. TCA1748AT-EP **Rev.** 01

Sample Issue No. _____

Sample Issue Date. Jul 18, 2012

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

APPROVED BY : _____

DATE : _____

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SPECIFICATION FOR APPROVAL

Customer:

Description: DC BLOWER

Customer P/N:

REV:

Delta Model NO.: TCA1748AT-EP

Smample Rev: 01

Issue NO:

Sample Issue Date: Jul 18, 2012

Quantity:

PCS

1. SCOPE:

THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL
CHARACTERISTICS OF THE DC BRUSHLESS CENTRIFUGAL BLOWER.

2. CHARACTERS:

ALL CHARACTERS ARE MEASURED UNDER THE STANDARD
ENVIRONMENTAL CONDITION (25°C AND 1 ATM).

ITEM	DESCRIPTION
RATED VOLTAGE	48.0 VDC
OPERATION VOLTAGE	36.0-60.0 VDC
INPUT CURRENT	1.60 (MAX. 1.92) A (CURRENT ON SAFETY LABEL : 2.10 A)
INPUT POWER	76.80 (MAX. 92.16) W
SPEED	4000±10% R.P.M.
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	12.125 (MIN. 10.913) M ³ /MIN. 428.00 (MIN. 385.22) CFM
MAX. AIR PRESSURE (AT ZERO AIRFLOW)	49.70 (MIN. 40.26) mmH ₂ O 1.957 (MIN. 1.585) inchH ₂ O
ACOUSTICAL NOISE (AVG.)	70.8 (AVG.) dB-A
INSULATION TYPE	UL:CLASS A
INGRESS PROTECTION	IP56(IEC60529 STANDARD)
SALT FOG PROTECTION	30 DAYS (GR-487)

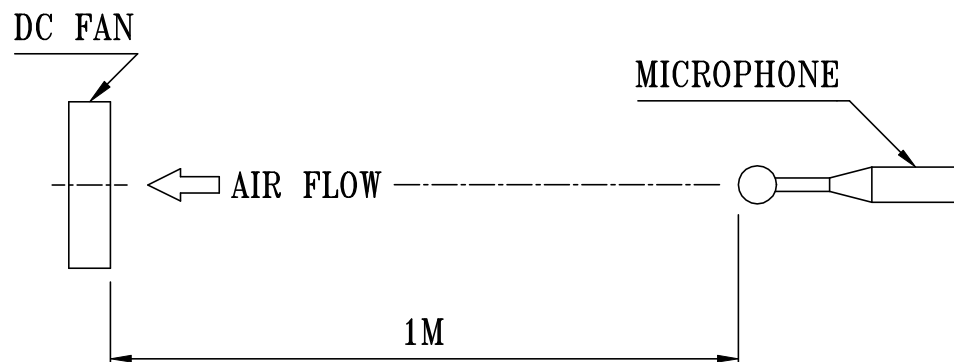
(continued)

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INSULATION STRENGTH	10 MEG OHM MIN. AT 500 VDC (BETWEEN PILLOW AND (+) TERMINAL)
DIELECTRIC STRENGTH	5 mA MAX. AT 500 VAC 50/60 Hz ONE MINUTE, (BETWEEN PILLOW AND (+) TERMINAL)
EXTERNAL COVER	OPEN TYPE
LIFE EXPECTANCE (AT LABEL VOLTAGE)	L10, 70,000 HOURS AT 40 °C WITH 15 ~ 65 %RH.
ROTATION	COUNTERCLOCKWISE VIEW FROM NAME PLATE SIDE
STARTING PROTECTION	START AT LOW SPEED , AFTER 10 SEC LOCK ROTOR PROTECTED BY
LEAD WIRE	UL 1430 AWG #22 RED WIRE POSITIVE (+) BLACK WIRE NEGATIVE (-) YELLOW WIRE (-PWM) BLUE WIRE (-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. PILLOW ----- ALUMINUM

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

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

3-5. WEIGHT ----- 670 GRAMS

4. ENVIRONMENTAL:

4-1. OPERATING TEMPERATURE ----- -25 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

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.

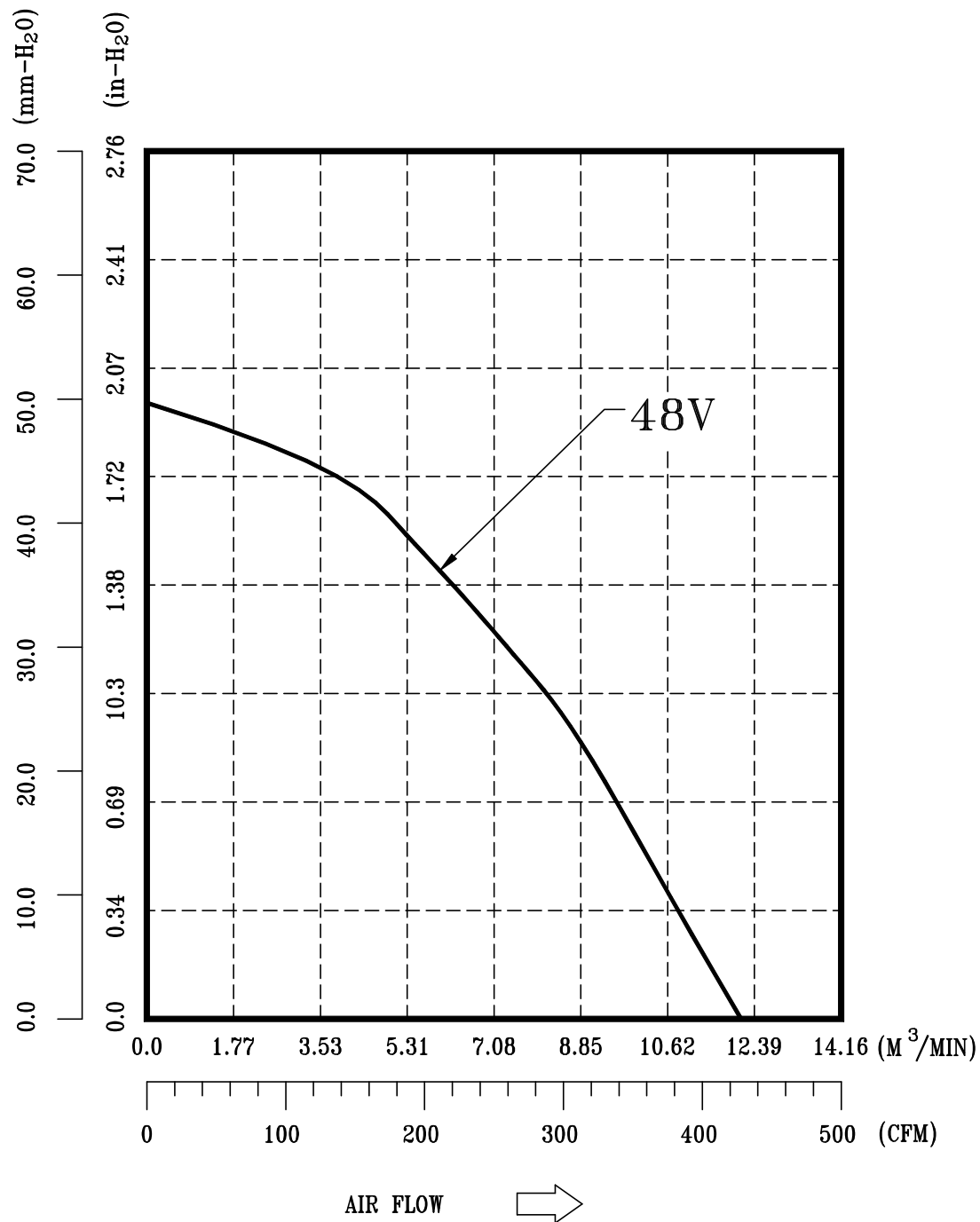
7. PRODUCTION LOCATION

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

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8. P & Q CURVE:



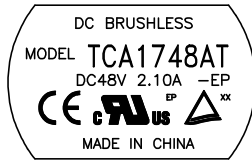
* TEST CONDITION: INPUT VOLTAGE ----- RATED VOLTAGE
TEMPERATURE ----- ROOM TEMPERATURE
HUMIDITY ----- 65%RH

PART NO:

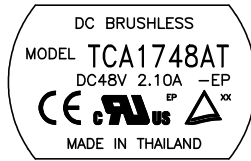
DELTA MODEL: TCA1748AT-EP

9. DIMENSION DRAWING:

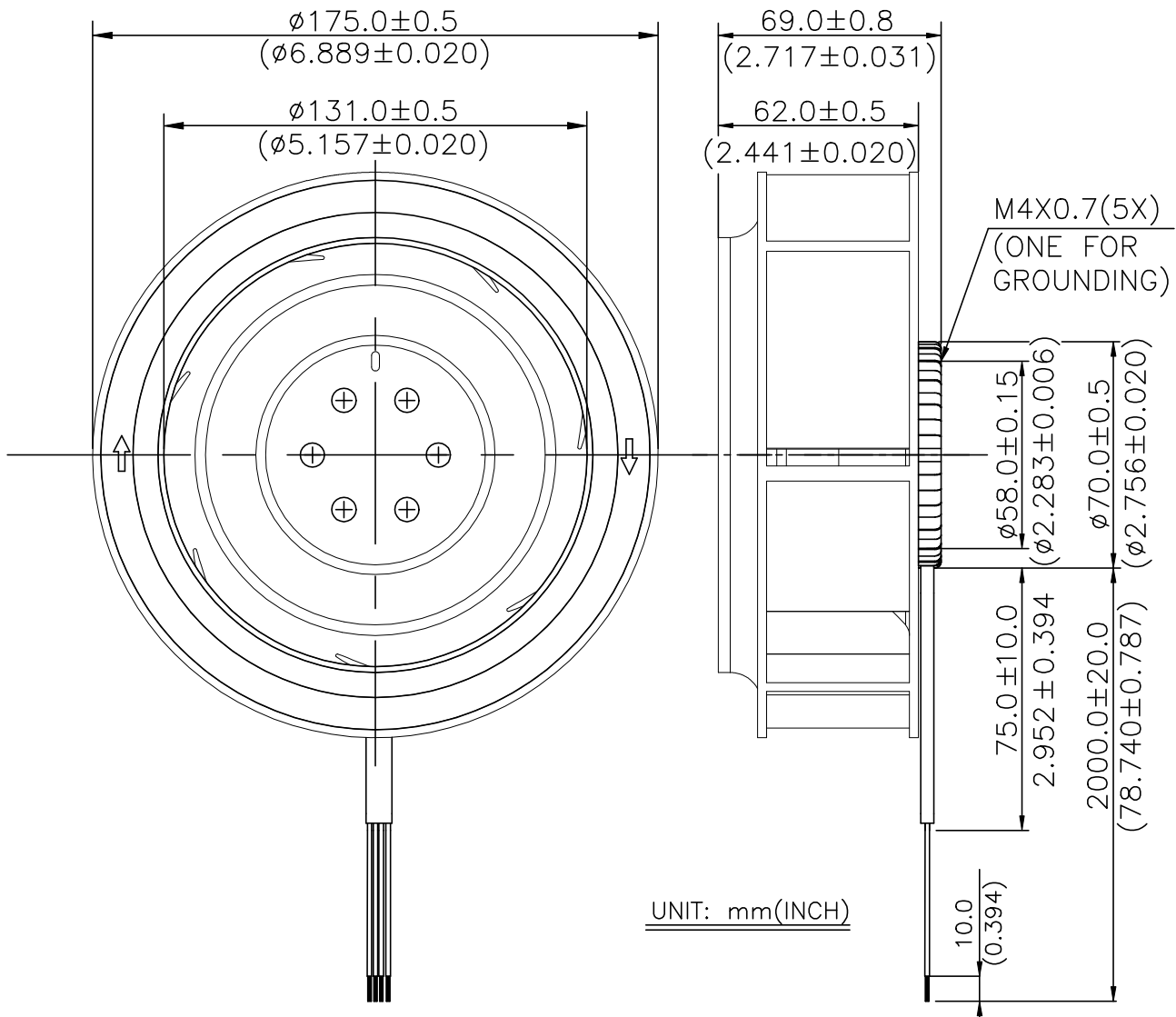
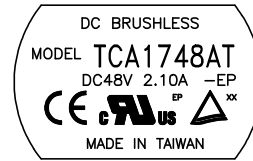
LABEL:



OR



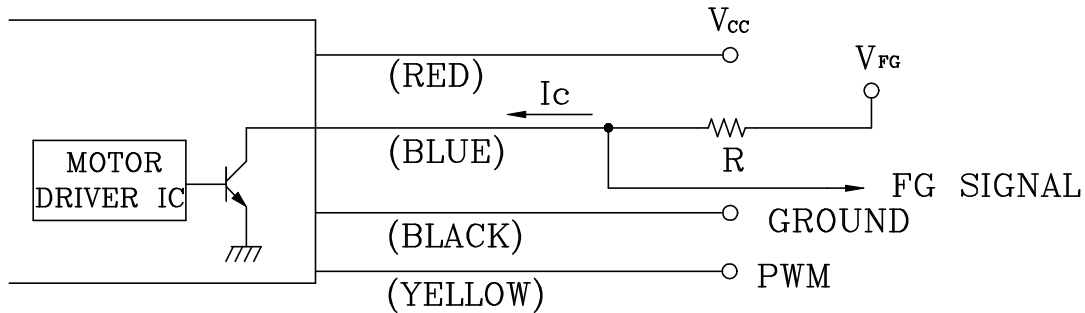
OR



- NOTES: 1. LEAD WIRE UL:1430 AWG#22
RED WIRE ----(+)
BLACK WIRE ----(-)
BLUE WIRE ----(F00)
YELLOW WIRE ----(PWM)
2. THIS PRODUCT IS RoHS COMPLIANT

DELTA MODEL: TCA1748AT-EP

1. OUTPUT CIRCUIT – OPEN COLLECTOR MODE:



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

$$V_{FG} = 60.0V \text{ MAX.} \quad I_c = 10mA \text{ MAX.}$$

$$V_{CE} = 0.5V \text{ MAX.} \quad R \geq V_{FG}/I_C$$

Timing diagram for V_{FG} showing three states: RUNNING, LOCKED, and RUNNING. The signal is high in the first and third states and low in the second state. The high level is labeled V_{FG} and the low level is labeled $0.5V_{MAX}$.

Timing diagram for the BLADE LOCKED state. The diagram shows a square wave signal. The first period is divided into four equal intervals labeled $T1$, $T2$, $T3$, and $T4$. The total duration of these four intervals is labeled TS . The signal then continues as a dashed line, indicating a continuation of the pattern. The text "BLADE LOCKED" is written above the signal, and "OR" is written below the signal.

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

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

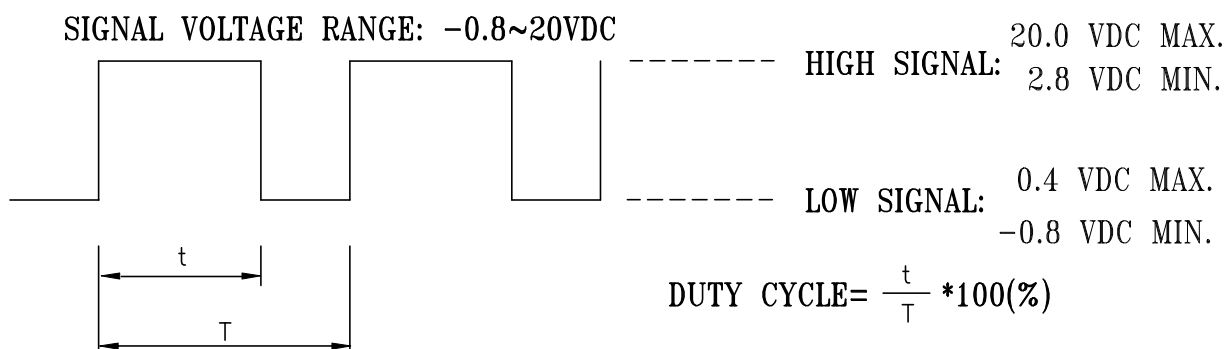
*VOLTAGE LEVEL AFTER BLADE LOCKED

*2 PULSES

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11. PWM CONTROL SIGNAL:

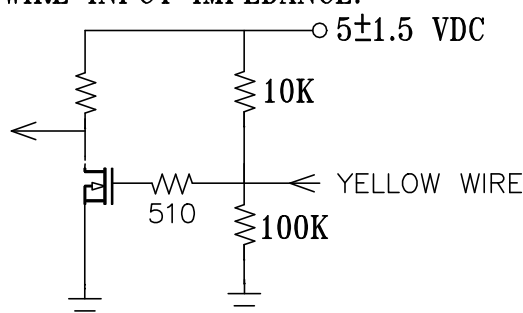


- THE PREFERRED OPERATING POINT FOR THE FAN IS 1KHZ.
- AT 100% DUTY CYCLE, THE ROTOR WILL SPIN AT MAXIMUM SPEED.
- AT 0% DUTY CYCLE, THE ROTOR WILL STOP.
- WITH CONTROL SIGNAL LEAD DISCONNECTED, THE FAN WILL SPIN AT MAXIMUM SPEED.
- AT DC48V 1KHZ 20% DUTY CYCLE, THE FAN WILL BE ABLE TO START FROM A DEAD STOP.

12. SPEED VS PWM CONTROL SIGNAL: (AT RATED VOLTAGE & F=1KHZ TEMP=25DEG.C)

DUTY CYCLE (%)	SPEED R.P.M. (REF.)	CURRENT (A) TYP.
100	4000±10%	1.60
50	2000±10%	0.51
20	900±200	0.10
0	0	0.02

13. PWM CONTROL LEAD WIRE INPUT IMPEDANCE:



13-1. THE FAN SPEED WILL DEFAULT TO MAXIMUM WHEN THE SPEED CONTROLL 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.**