

Global Operations



	Greater China	Asia (Except Greater China)	Americas	Europe
Sales Offices	8	4	9	21
Manufacturing Plants	11	3	1	2
R&D/Engineering Labs	5	5	4	4
Logistics Hubs	8	8	37	33

DELTA ELECTRONICS INC.
 252, SHANG YING ROAD, KUEI SAN
 TAOYUAN HSIEN 333, TAIWAN, R.O.C.
 TEL : 886-3-359-1968
 FAX : 886-3-359-1991

DELTA ELECTRONICS (DONGGUAN) CO., LTD.
 DELTAINDUSTRIAL ESTATE, SHIJIE TOWN
 DONGGUAN, GUANGDONG
 PEOPLE'S REPUBLIC OF CHINA
 POST CODE : 523308
 TEL : 86-769-8632-9008
 FAX : 86-769-8663-1589

DELTA ELECTRONICS COMPONENTS (JIANG SU) LTD.
 1688 JIANGXING EAST ROAD,
 WUJIANG ECONOMIC DEVELOPMENT ZONE,
 WUJIANG CITY, JIANG SU PROVINCE,
 PEOPLE'S REPUBLIC OF CHINA
 POST CODE: 215200
 TEL: 86-512-6340-1008
 FAX: 86-512-6340-1564

DELTA ELECTRONICS (JAPAN) INC.
 DELTASHIBADAIMON BUILDING
 2-1-14 SHIBADAIMON, MINATO-KU
 TOKYO, 105-0012
 JAPAN
 TEL : 81-3-5733-1111
 FAX : 81-3-5733-1211

DELTA PRODUCTS CORPORATION
 4405 CUSHING PARKWAY
 FREMONT, CA 94538
 U.S.A.
 TEL : 1-510-668-5100
 FAX : 1-510-668-0680

P.O. BOX 12173
 5101 DAVIS DRIVE
 RESEARCH TRIANGLE PARK
 NC 27709
 U.S.A.
 TEL : 1-919-767-3800
 FAX : 1-919-767-8080

DELTA ELECTRONICS EUROPE LTD.
 1 REDWOOD COURT
 PEEL PARK CAMPUS
 EAST KILBRIDE, G74 5PF
 UNITED KINGDOM
 TEL : 44-1355-588888
 FAX : 44-1355-588889

DELTRONICS (NETHERLANDS) B.V.
 WEGALAAN 16
 2132 JC HOOFDORP
 THE NETHERLANDS
 TEL : 31-23-5668-989
 FAX : 31-23-5668-910

**DELTA ELECTRONICS (THAILAND)
 PUBLIC COMPANY LIMITED**
 111 MOO 9, WELLGROW INDUSTRIAL ESTATE,
 BANGNA-TRAD ROAD., TAMBON BANGWUA,
 AMPHUR BANGPAKONG, CHACHOENGSAO
 24180, THAILAND
 TEL : 66-38-522-455
 FAX : 66-38-52-477

Introduction



Delta is a leading global electronics company offering a broad spectrum of electronic components and equipment including switching power supplies, color monitors, EMI/RFI filters, magnetics, networking components, chip and power inductors, motors, resistor networks, and DC fans. Our strong capabilities in product design, manufacturing, automation and quality assurance make us the preferred supplier to OEM customers and distributors around the world.

For brushless DC fans, Delta's highly experienced design engineers have in-depth knowledge of customer applications and cooling requirements. Advanced engineering equipment such as computerized CNC machines, anechoic chambers and wind tunnels are used to develop high performance, low noise, and cost effective DC fans.

Delta is an ISO-9001 & TS16949 certified manufacturer for brushless DC fans, with ROHS compliance beginning in Q2 2005. We implement strict reliability tests in the design stage and have put into place Statistical Process Controls at each step of the production process. Because of our outstanding performance in quality and reliability, Delta has earned vendor awards from major customers such as Asus, Cisco, Dell, HP, IBM, NCR, NEC, Nortel, Philips, Xerox and others.



Anechoic Chamber for Noise Test



Wind Tunnel



Computerized CNC Machine



Automated Balance Test

Our automation department is highly specialized with computerized state-of-the-art equipment. We build computer integrated automated production lines in-house for the assembly and testing of our DC fans. This allows us to provide large production capacity plus high quality and cost effective products to our customers.

Delta's DC fan manufacturing plants are located in Dongguan, Wujiang (China), Bangkok (Thailand) and Taiwan, with sales offices located globally. Delta maintains a stock of standard models in Taiwan, the U.S.A., Japan, and Europe through our extensive distribution network. Our worldwide manufacturing and customer service enables us to meet customer requirements flexibly and effectively as well as serve domestic companies with international affiliations.



Manufacturing Plant 2 in Taoyuan, Taiwan

Manufacturing Plant in Wujiang, China

Manufacturing Plant in Dongguan, China

Manufacturing Plant in Bangkok, Thailand

2003 National Invention Award



QS 9000 accredited ISO/TS 16949 certified manufacturer for Air Cooling Fan products



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DC Fan With Minimum Noise

Introductions

- Every model undergoes rigorous aerodynamic analysis and anechoic chamber test to achieve minimum noise under high airflow and air pressure conditions.
- High precision maintenance-free ball bearing system provides superb reliability.
- Frame and fan blade meet UL 94V-0 flammability rating.
- Every model features locked rotor protection and polarity protection, and offers optional frequency generator or rotation detector function.
- All DC fans are 100% balanced to guarantee low vibration and excellent durability.
- Automatic multi-axes winding, surface-mount machine and highly automated assembly lines enable mass production and consistent quality.
- UL, CSA, VDE approved.

Part Number Definition

AFB	12	12	H	E	-	B	F	00
1	2	3	4	5		6	7	8

1. SERIES CODE :
AFB,AHB,EFB,EHB,FFB,FHB,GFB,
LFB,NFB,TFB,BFB, KFB,KHB,SFB,

2. FRAME DIMENSION:
02 : 125 x 38 x 45 mm
03 : 30 mm SQUARE
or 180 x 38 x 45 mm
032 : Ø32 x 9 mm
035 : 35 mm SQUARE
04 : 40 mm SQUARE
or 42 x 45 x 19 mm
045 : 45 mm SQUARE
05 : 50 mm SQUARE
or 51 x 51 x 15 mm
06 : 60 mm SQUARE
07 : 70 mm SQUARE
or 75 x 75 x 30 mm
08 : 80 mm SQUARE
09 : 92 mm SQUARE
10 : 97 x 94 x 33
or Ø100 x 46.8 mm
12 : 120 mm SQUARE
or 125 x 126 x 34 mm
or 120 x 120 x 32 mm
13 : 127 mm SQUARE
or Ø133 x 61.5 mm
14 : 140 mm SQUARE
15 : 172 x 150 mm
16 : 159 x 165 x 40 mm
17 : Ø172 mm
or Ø175 x 69.0 mm

3. OPERATION VOLTAGE :
05 : DC 5V
12 : DC 12V
24 : DC 24V
48 : DC 48V

4. SPEED (RPM) :
L : LOW
M : MEDIUM
H : HIGH
HH : EXTRA HIGH
VH : VERY HIGH
SH : SUPER HIGH
EH : EXTERNAL HIGH
GH : GRAND HIGH SPEED
UH : ULTRA HIGH SPEED
DH : DRASTIC HIGH SPEED
XH : EXTREME HIGH SPEED

5. FRAME THICKNESS:
A : 10 mm
C : 13 mm
B : 15 mm
D : 20 mm
(BLANK) : 25.4 mm
N : 28 mm
F : 32 mm
E : 38 mm
or RIGHT SIDE
EXHAUST (INTAKE
VIEW FOR BFB
SERIES)
G : 50.8 mm OR 48mm
S : 55 mm
T : 61.0-71.0 mm
W : 72.0-85.0 mm
U : 86.0-105.0 mm
V : 106.0-125.0 mm

6. FRAME TYPE:
(BLANK) : FLANGE TYPE
B : RIB TYPE (10mm, 13mm, 15mm, 20mm
THICKNESS)
M : METAL FRAME

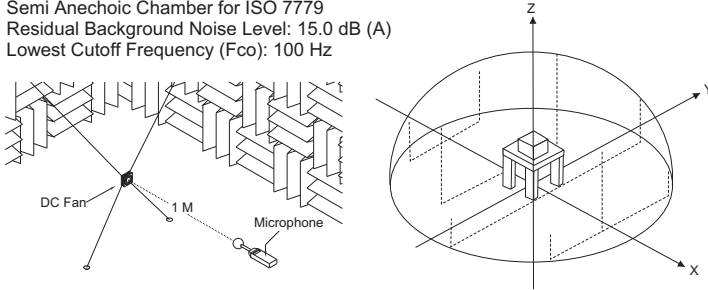
7. SIGNAL OUTPUT :
F : FREQUENCY GENERATOR OUTPUT
(SPEED SENSOR) OR TACH OUTPUT
R : ROTATION DETECTOR OUTPUT
(FAILURE DETECTOR)

8. SIGNAL OUTPUT VOLTAGE :
00 : VCC (OPEN COLLECTOR)

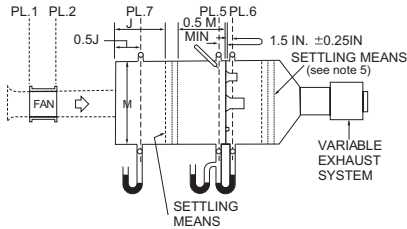
Note

1. NOISE IS MEASURED AT RATED VOLTAGE IN ANECHOIC CHAMBER IN FREE AIR WITH LARSON DAVIS AND WITH MICROPHONE AT A DISTANCE OF ONE METER FROM THE FAN INTAKE. REFER TO ANSI-S12.10 AS SHOWN BELOW:

SEMI ANECHOIC CHAMBER LEVEL
Semi Anechoic Chamber for ISO 7779
Residual Background Noise Level: 15.0 dB (A)
Lowest Cutoff Frequency (Fco): 100 Hz

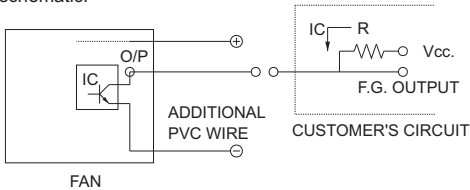


2. THE PERFORMANCE INCLUDING AIR FLOW AND AIR PRESSURE MEASURED AT RATED VOLTAGE IN DOUBLE CHAMBER IS MEASURED ACCORDING TO AMCA 210 STANDARD AS SHOWN BELOW:



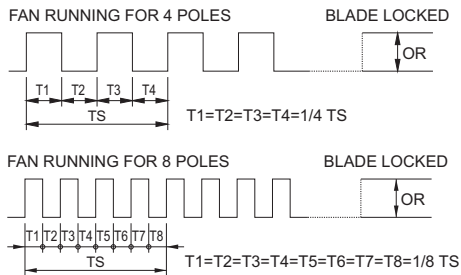
3. FREQUENCY GENERATOR O/P: (F00)

Frequency generator function is activated by an internal IC for customer's application.
Electrical schematic:



CUSTOMER'S CIRCUIT
Vcc = From +5 To +28 VDC (Generally using +12 or +24 VDC)
Ic = 5 mA max.
R = V/I (Output "R" value calculation)

SUPPLY A WAVEFORM:

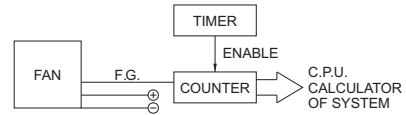


N=R.P.M. (Rotation speed will be different for various models L/M/H/HH/VH/SH)
TS=60/N (Sec)
* Voltage level after blade locked
* 4 POLES OR 8 POLES

OUTPUT LEVEL:

High = $V_{cc} \pm 10\%$
Low = 0~0.5V
Ic = 5 mA max.

APPLICATION:

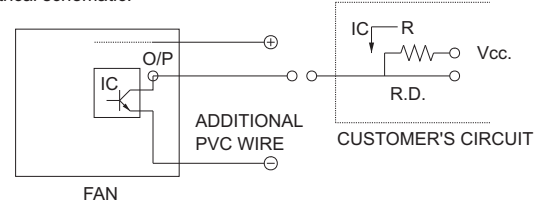


FUNCTIONS:

- By means of waveform & customer's design, schematic can reach alarm function, either in the form of buzzing or LED flashing. Adjust rotation speed.
- When power supply output voltage level decreases, it will result in the lowering of fan rotation speed. The irregular situation will be controlled by using F.G. O/P through P/S circuit to increase the output voltage and result in a stable rotation speed.

4. ROTATION DETECTOR O/P (R00)

Rotation detector function is activated by an internal IC for customer's application.
Electrical schematic:



CUSTOMER'S CIRCUIT

Vcc = From +5 To +28 VDC (Generally use +12 or +24 VDC)
Ic = 5 mA max.
R = V/I (Output "R" value calculation)

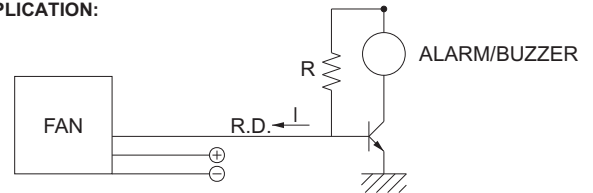
SUPPLY A WAVEFORM:



OUTPUT LEVEL:

High = $V_{cc} \pm 10\%$
Low = 0~0.5V
Ic = 5 mA max.

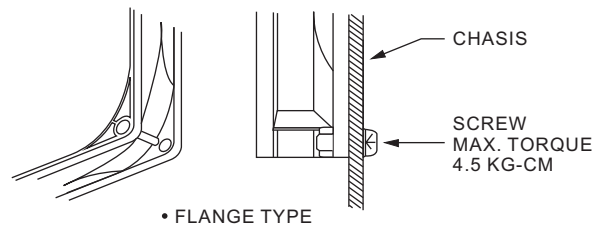
APPLICATION:



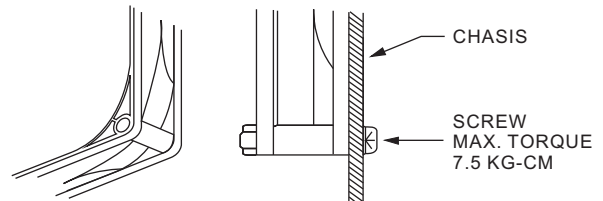
FUNCTION:

By means of waveform & customer's design, schematic can reach alarm function: either in the form of buzzing or LED flashing.

5. FRAME TYPE:



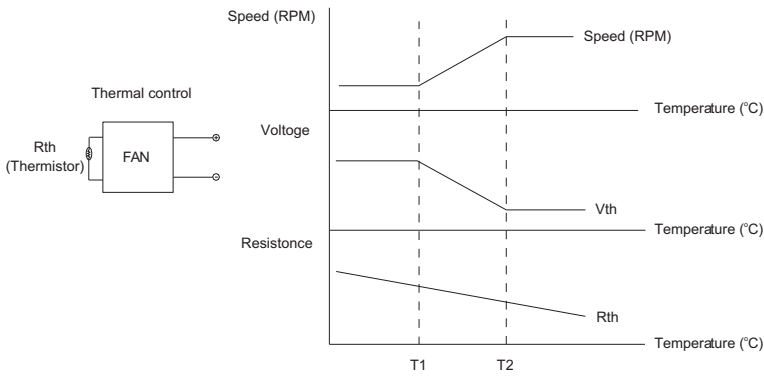
• FLANGE TYPE



• RIB TYPE

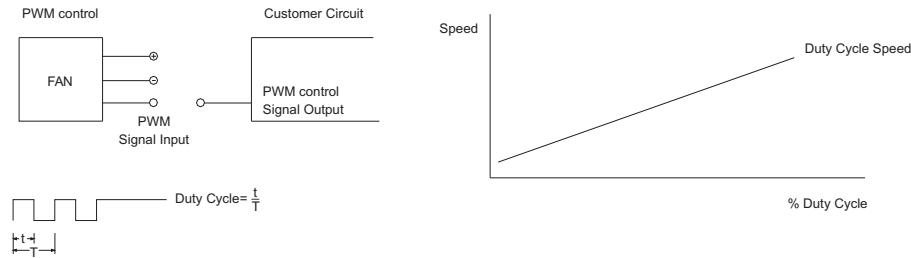
6. TEMPERATURE CONTROL : "SENSFLOW"

With temperature controlled fan, the RPM can be controlled by on board or off board thermistor. The RPM and temperature range is subject to custom request.



7. PWM CONTROL

In PWM speed control, a fixed frequency square wave is applied to the speed control lead wire of the fan. The ratio of the on time vs. the PWM period is proportional to the RPM.



■ PWM INPUT VOLTAGE RANGE:

High level= 2.8 to 20 VDC
Low level= 0 to 0.4 VDC

■ PWM INPUT CURRENT (IPWM) RANGE:

40uA to 20mA

To control signal line of the fan shall be able to accept a 30Hz to 30kHz.
The preferred operating point for the fan is 0%~100% of duty cycle.