

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 Innovation 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.

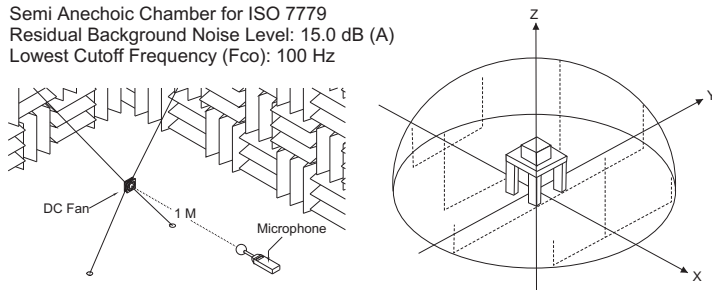
Part Number Definition

AFB	12	12	H	E	-	B	F	00
1	2	3	4	5		6	7	8
1. SERIES CODE :			3. OPERATION VOLTAGE :			6. FRAME TYPE:		
AFB,AHB,EFB,EHB,FFB,FHB,GFB,			05 : DC 5V			(BLANK) : FLANGE TYPE		
LFB,NFB,TFB,BFB, KFB,KHB,SFB,			12 : DC 12V			B : RIB TYPE (10mm, 13mm, 15mm, 20mm		
			24 : DC 24V			THICKNESS)		
			48 : DC 48V			M : METAL FRAME		
2. FRAME DIMENSION:			4. SPEED (RPM) :			7. SIGNAL OUTPUT :		
02 : 125 x 38 x 45 mm			L : LOW			F : FREQUENCY GENERATOR OUTPUT		
03 : 30 mm SQUARE			M : MEDIUM			(SPEED SENSOR) OR TACH OUTPUT		
or 180 x 38 x 45 mm			H : HIGH			R : ROTATION DETECTOR OUTPUT		
032 : Ø32 x 9 mm			HH : EXTRA HIGH			(FAILURE DETECTOR)		
035 : 35 mm SQUARE			VH : VERY HIGH			8. SIGNAL OUTPUT VOLTAGE :		
04 : 40 mm SQUARE			SH : SUPER HIGH			00 : VCC (OPEN COLLECTOR)		
or 42 x 45 x 19 mm			EH : EXTERNAL HIGH					
045 : 45 mm SQUARE			GH : GRAND HIGH SPEED					
05 : 50 mm SQUARE			UH : ULTRA HIGH SPEED					
or 51 x 51 x 15 mm			DH : DRASTIC HIGH SPEED					
06 : 60 mm SQUARE			XH : EXTREME HIGH SPEED					
07 : 70 mm SQUARE			5. FRAME THICKNESS:					
or 75 x 75 x 30 mm			A : 10 mm					
08 : 80 mm SQUARE			C : 13 mm					
09 : 92 mm SQUARE			B : 15 mm					
10 : 97 x 94 x 33			D : 20 mm					
or Ø100 x 46.8 mm			(BLANK) : 25.4 mm					
12 : 120 mm SQUARE			N : 28 mm					
or 125 x 126 x 34 mm			F : 32 mm					
or 120 x 120 x 32 mm			E : 38 mm					
13 : 127 mm SQUARE			or RIGHT SIDE					
or Ø133 x 61.5 mm			EXHAUST (INTAKE					
14 : 140 mm SQUARE			VIEW FOR BFB					
15 : 172 x 150 mm			SERIES)					
16 : 159 x 165 x 40 mm			G : 50.8 mm OR 48mm					
17 : Ø172 mm			S : 55 mm					
or Ø175 x 69.0 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					

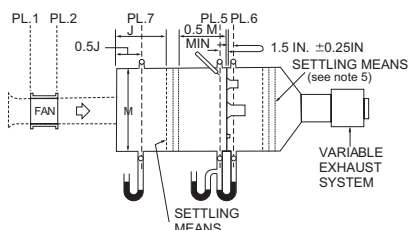
Note

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

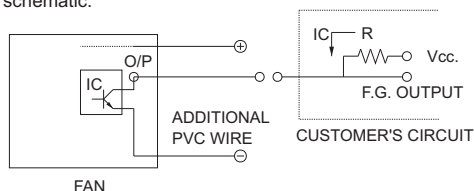


2. THE PERFORMANCE INCLUDING AIR FLOW AND AIR PRESSURE MEASURED AT RATED VOLTAGE IN DOUBLE CHAMBER IS MEASURED ACCORDING TO AMCA 210 STANDARD AS SHOWN BELOW:



3. FREQUENCY GENERATOR O/P: (F00)

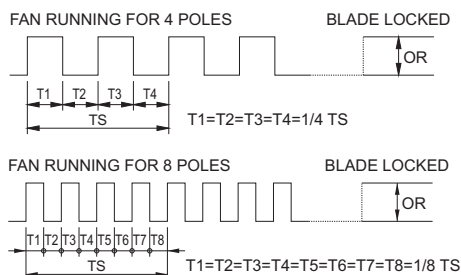
Frequency generator function is activated by an internal IC for customer's application.
 Electrical schematic:



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:

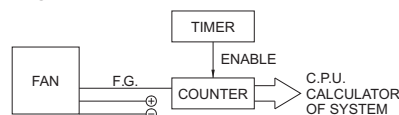


N=R.P.M. (Rotation speed will be different for various models
 L/M/H/HH/VH/SH)
 TS=60/N (Sec)
 * Voltage level after blade locked
 * 4 POLES OR 8 POLES

OUTPUT LEVEL:

High = Vcc±10%
 Low = 0~0.5V
 Ic = 5 mA max.

APPLICATION:

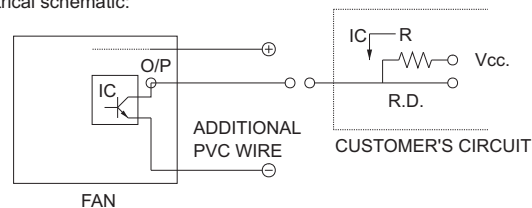


FUNCTIONS:

- 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)

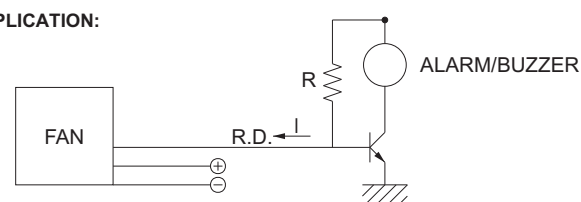
SUPPLY A WAVEFORM:



OUTPUT LEVEL:

High = Vcc±10%
 Low = 0~0.5V
 Ic = 5 mA max.

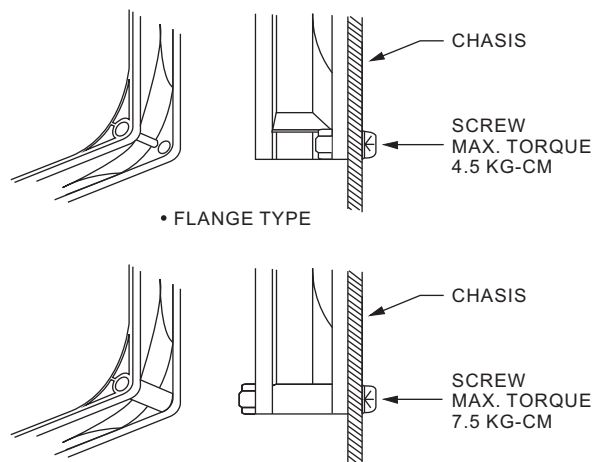
APPLICATION:



FUNCTION:

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

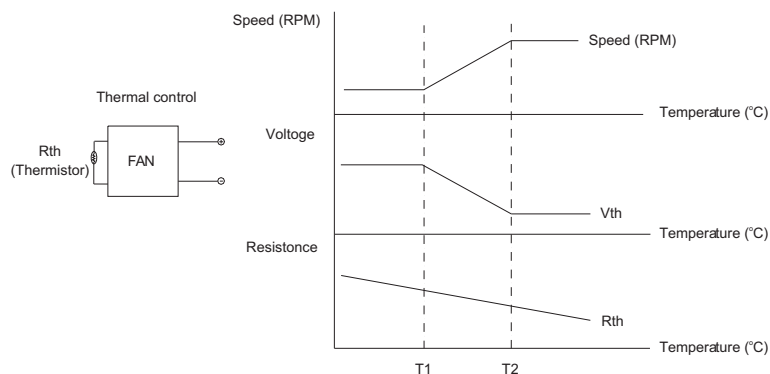
5. FRAME TYPE:



• RIB TYPE

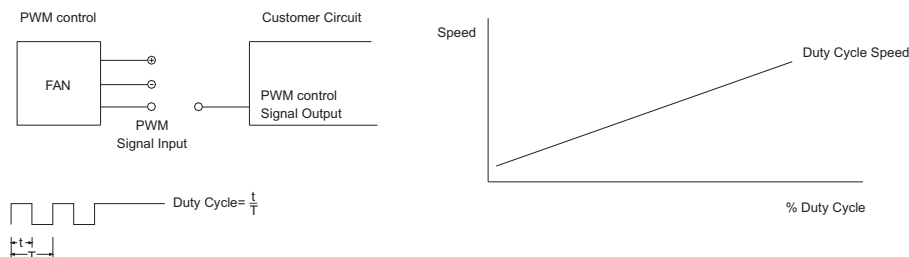
6. TEMPERATURE CONTROL : "SENSFLOW"

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.