

# 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.

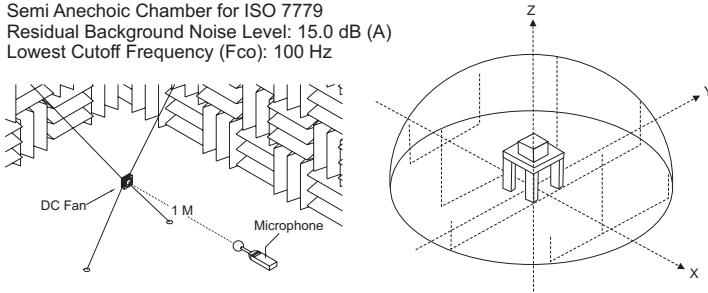
## Part Number Definition

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,		3. OPERATION VOLTAGE :		6. FRAME TYPE:			
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		05 : DC 5V 12 : DC 12V 24 : DC 24V 48 : DC 48V		(BLANK) : FLANGE TYPE B : RIB TYPE (10mm, 13mm, 15mm, 20mm THICKNESS) M : METAL FRAME			
			4. SPEED (RPM) :		7. SIGNAL OUTPUT :			
			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		F : FREQUENCY GENERATOR OUTPUT (SPEED SENSOR) OR TACH OUTPUT R : ROTATION DETECTOR OUTPUT (FAILURE DETECTOR)			
			5. FRAME THICKNESS:		8. SIGNAL OUTPUT VOLTAGE :			
			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 : 69.0 mm W : 76.2 mm		00 : VCC (OPEN COLLECTOR)			

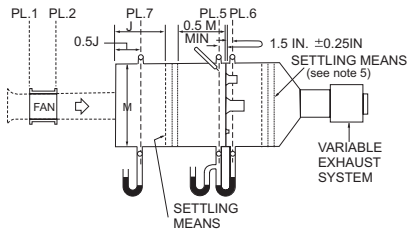
## Note

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



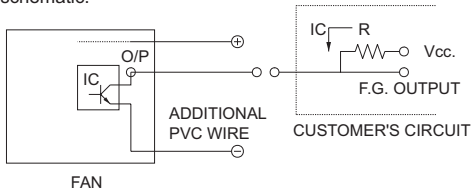
2. THE PERFORMANCE INCLUDING AIR FLOW AND AIR PRESSURE MEASURED AT RATED VOLTAGE IN DOUBLE CHAMBER IS MEASURED ACCORDING TO AMCA 210 STANDARD AS SHOWN BELOW:



3. FREQUENCY GENERATOR O/P: (F00)

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

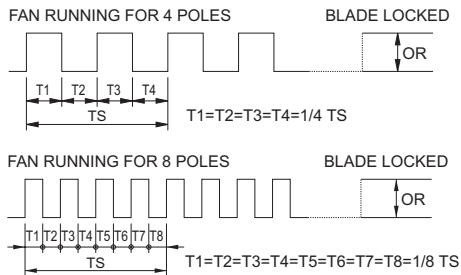
Electrical schematic:



### CUSTOMER'S CIRCUIT

$V_{cc}$  = From +5 To +28 VDC (Generally using +12 or +24 VDC)  
 $I_c$  = 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)

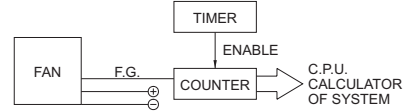
$TS = 60/N$  (Sec)

\* Voltage level after blade locked  
\* 4 POLES OR 8 POLES

### OUTPUT LEVEL:

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

### APPLICATION:



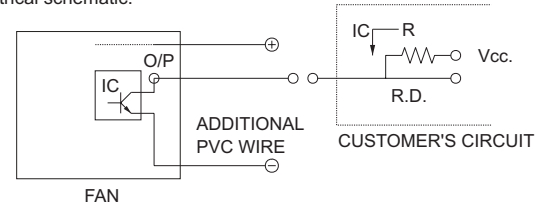
### FUNCTIONS:

- 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

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 $I_c$  = 5 mA max.  
 $R = V/I$  (Output "R" value calculation)

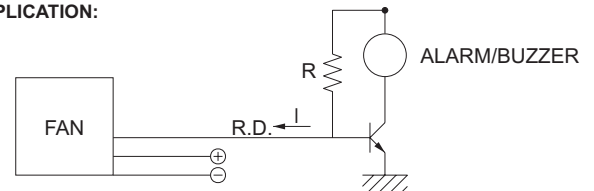
### SUPPLY A WAVEFORM:



### OUTPUT LEVEL:

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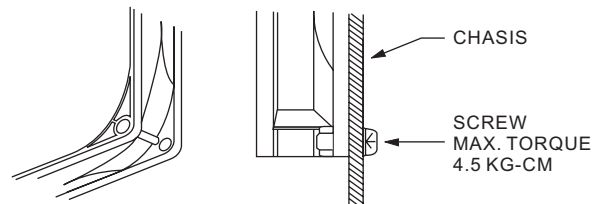
### APPLICATION:



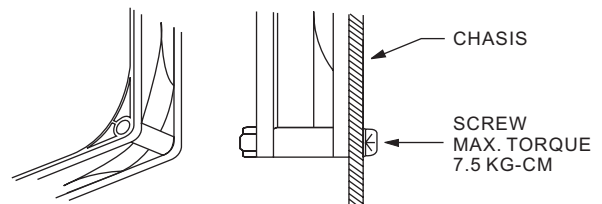
### FUNCTION:

- 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

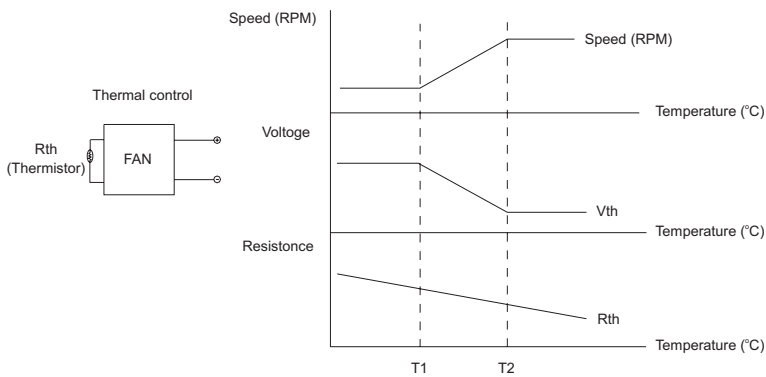


### • RIB TYPE

## Note

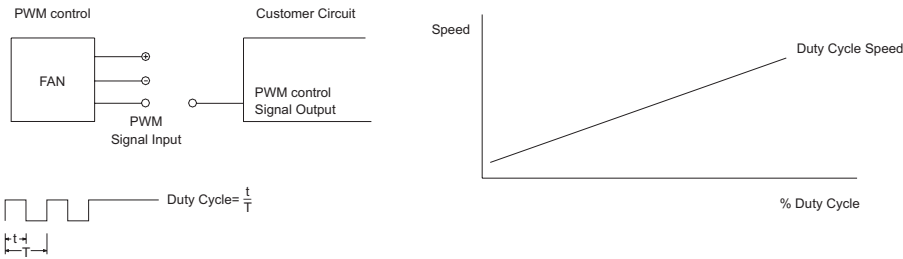
### 6. TEMPERATURE CONTROL : "SENSFLOW"

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.