

# S6

3U Active Air Cooler

**PRODUCT SPECIFICATIONS**

## Model Number: S6

- Recommend for Intel® CPU as following
  - Intel® Sapphire Rapids Processors, Socket LGA 4677
- Active Cooler for 3U Server, Workstation & Up

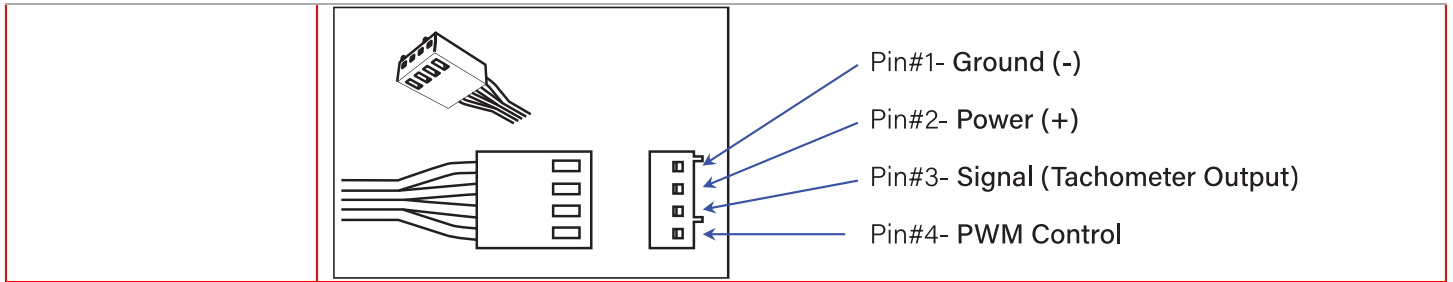
## Overall Specification

Dimension	118 x 82 x 110 mm
Weight	659.3 g
Material	Aluminum Stacked-Fin with Heat Pipes directly contact CPU
Fan	8038 Side-blow fan with PWM Function
Mounting Method	Intel LGA 4677 standard Mounting Kits
Package Carrier	PHM Package Carrier is included
Thermal Grease	SHIT-ETSU 7762 pre-printed
TDP	Support CPU Power up to 350 Watts Heat Dissipation

## Cooling Fan Specification

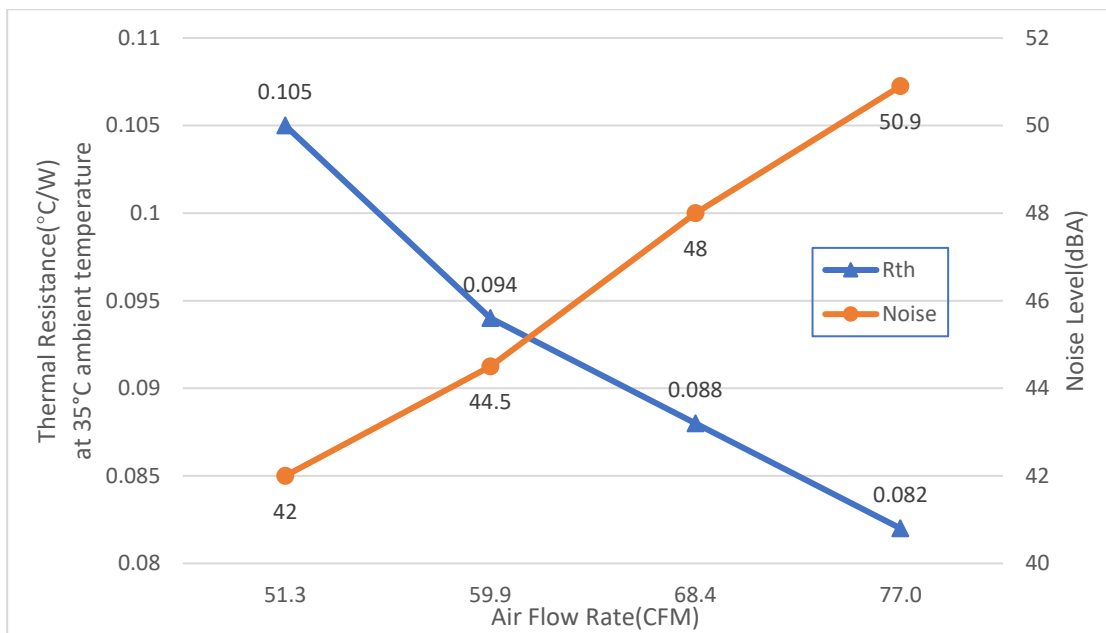
Model Number	DF128038BM-PWM
Dimension	80 x 80 x 38 mm
Bearing	Double Ball
Rated Voltage	12V
Rated Speed	At Duty Cycle 0~20%: 1300± 200 RPM At Duty Cycle 50%: 2450± 10% RPM At Duty Cycle 100%: 4500±10% RPM
Input Power	At Duty Cycle 0~20%: 1.20 W At Duty Cycle 50%: 2.64 W At Duty Cycle 100%: 9.00 W
Maximum Airflow	At Duty Cycle 0~20%: 22.23 CFM At Duty Cycle 50%: 41.90 CFM At Duty Cycle 100%: 76.95 CFM
Rated Static Pressure	At Duty Cycle 0~20%: 1.068 mm-H <sub>2</sub> O At Duty Cycle 50%: 3.794 mm-H <sub>2</sub> O At Duty Cycle 100%: 12.798 mm-H <sub>2</sub> O
Acoustical Noise	At Duty Cycle 0~20%: 23.95 dBA At Duty Cycle 50%: 37.71 dBA At Duty Cycle 100%: 50.91 dBA
Lead Wire Pin Out	Pin#1- Black(-) Pin#2- Yellow(+) Pin#3- Green(Tachometer/ Signal Output) Pin#4- Blue (PWM)

## S6 | Socket LGA 4677

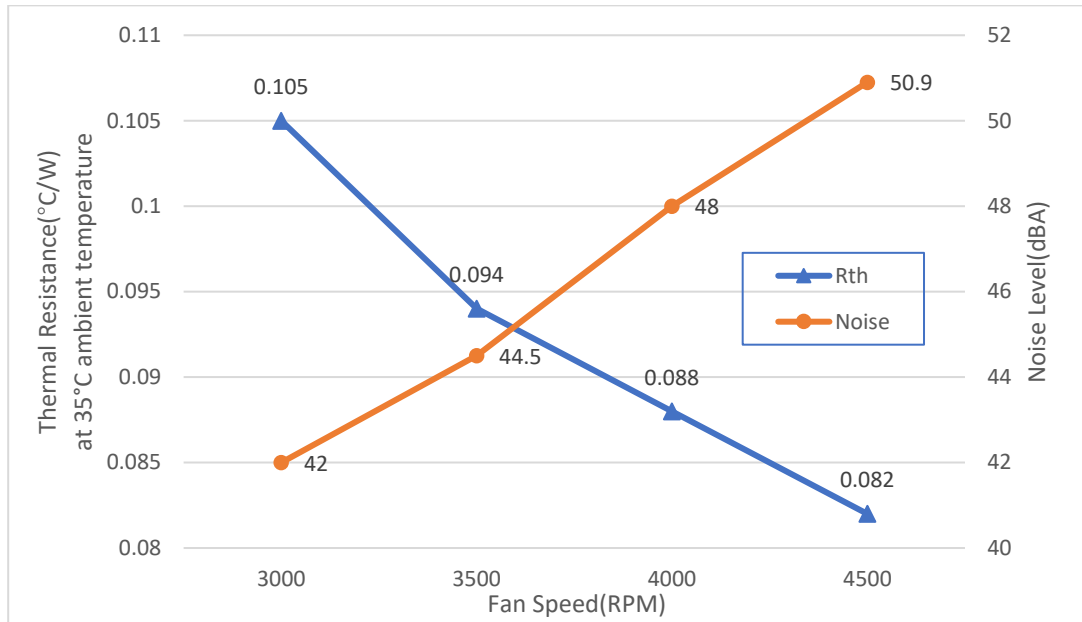


## Performance Chart: Active Cooler S6 Thermal Resistance

### Active Cooler S6 Cooling Performance vs. Airflow



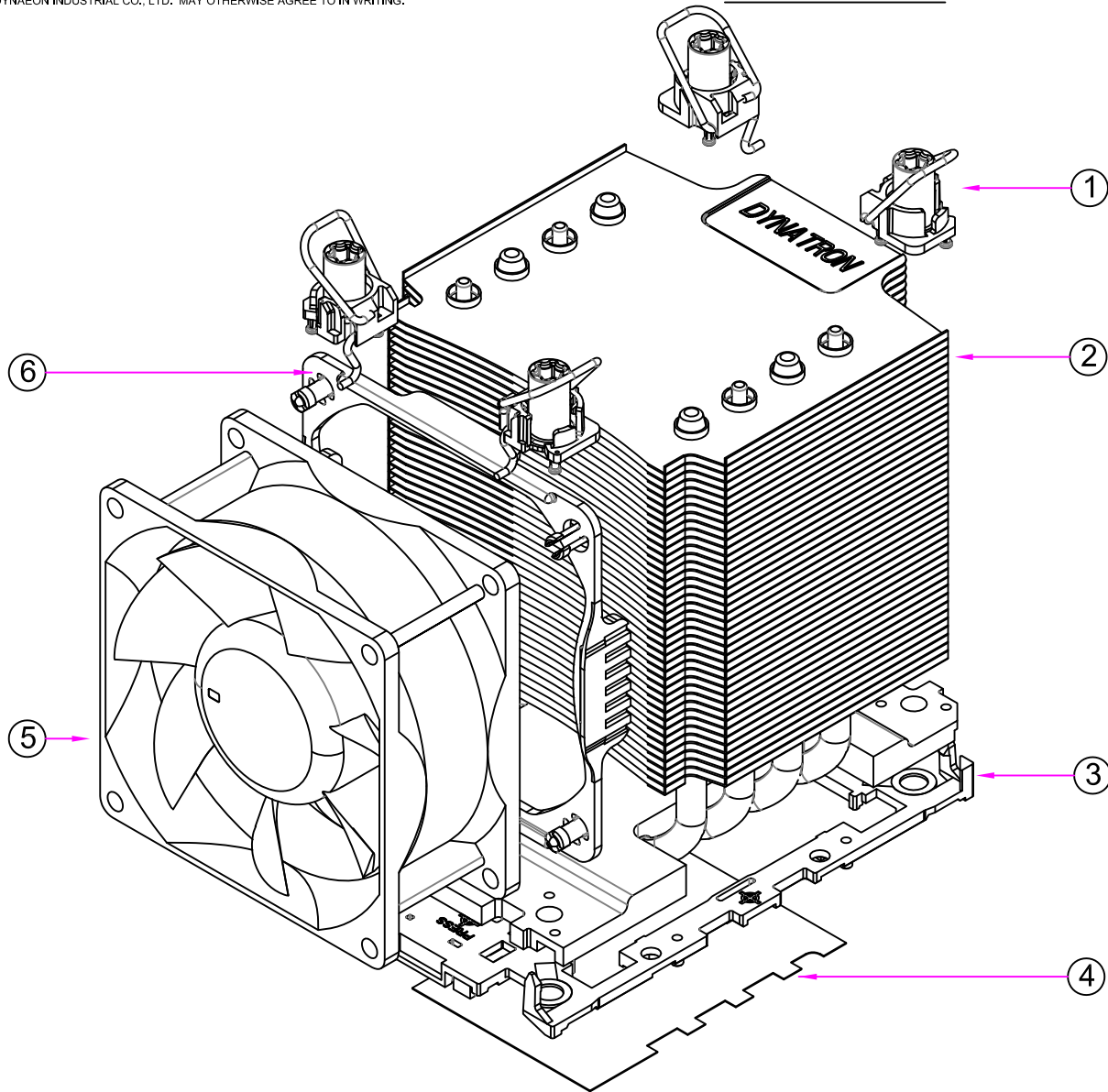
## Active Cooler S6 Cooling Performance vs. Fan Speed



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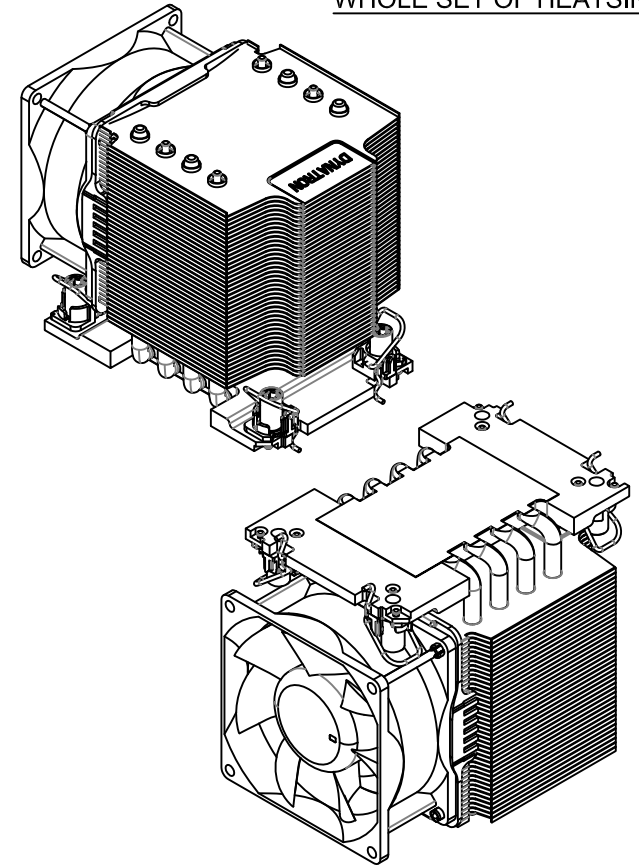
ASSEMBLY PARTS




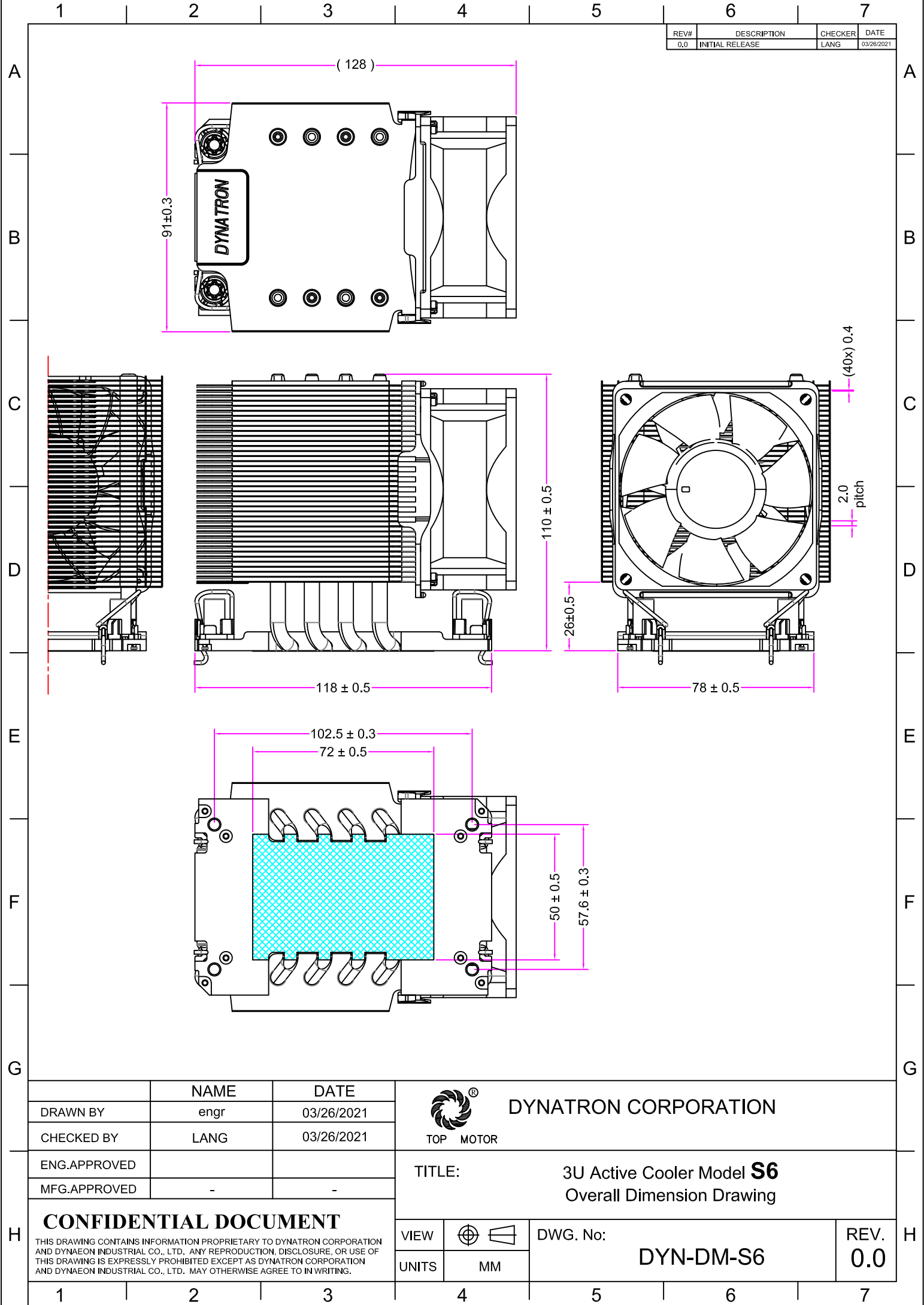
NOTES:

1. THE FIGURE IS FOR REFERENCE ONLY, AND NOT FOR SCALE
2. OVERALL DIMENSION : 118 x 78 x 110 mm
3. OVERALL WEIGHT : 680g

WHOLE SET OF HEATSINK



6	FAN BRACKET	PLASTIC	1
5	FAN, DF128038BH - PWM ( 4500 RPM )	PLASTIC	1
4	THERMAL GREASE, PRE-PRINTED	SHIN-ETSU 7762	1
3	INTEL PACKAGE CARRIER	PLASTIC	1
2	HEATSINK, with STACKED FINS	HEAT PIPES ALUMINUM BASE ALUMINUM STACKED FIN	1
1	ANTI-TILT ROTATING WIRE ASSEMBLY SET	PLASTIC NUT AND CAPTIVATION STEEL RORATING WIRE	4
ITEM#	DESCRIPTION	MATERIAL	QTY.
	DATE	NAME	DYNATRON CORPORATION 
DRAWN	03/26/2021	Engr	
CHECKED	03/26/2021	LANG	
ENG. APPR.			
MFG. APPR.			TITLE: 3U Active Cooler Model <b>S6</b> BOM & Exploded Assembly Drawing
G.A.			
COMMENTS:			
		DWG. No:	DYN-EP-S6
		REV	0.0



REV#	DESCRIPTION	CHECKER	DATE
0.0	INITIAL RELEASE	LANG	03/26/2021

	NAME	DATE
DRAWN BY	engr	03/26/2021
CHECKED BY	LANG	03/26/2021
ENG.APPROVED		
MFG.APPROVED	-	-



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TITLE: 3U Active Cooler Model **S6**  
Overall Dimension Drawing

VIEW	
UNITS	MM

DWG. No:	DYN-DM-S6
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REV.	0.0
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# DYNATRON CORPORATION

**TOP MOTOR TECHNOLOGY (HUIZHOU) CO, LTD**

## *Specification for Approval*

Customer:		
Model Number:	DF128038BM-PWM (80*80*38mm)	
Part Number:		
Issued Date:	Friday, September 19, 2014	
<b>Customer Approval</b>		
Approval:	Check:	
<b>Corporate Headquarters</b> <b><i>Dynatron Corporation</i></b> 41458 Christy Street, Fremont, California 94538, U.S.A. Tel: 510-498-8888 Fax: 510-498-8488	<b>Manufactory</b> <b><i>TOP MOTOR TECHNOLOGY(HUIZHOU)CO,LTD</i></b> Baishi Village, Qiuchang Town, Huiyang Dist, Huizhou City, Guangdong Province, P.R. China Tel: 86-752-353-5591 (Rep.) Fax: 86-752-353-5592	
<b><i>Los Angeles Office (U.S.A.)</i></b> 337 Paseo Sonrisa, Walnut, California 91789 U.S.A. Tel: 909-598-2222 Fax: 909-598-8158	<b><i>Taipei Office (Taiwan, R.O.C.)</i></b> 8F, No. 35, Lane:221, Gang Cian. Road, Taipei, Taiwan, R.O.C. Tel: 886-2-2799-5799 (Rep.) Fax: 886-2-2799-9577	
Approval:	Check:	Initiator:
Simon_Wang	-	Jandy Chan



# DYNATRON CORPORATION

***TOP MOTOR TECHNOLOGY (HUIZHOU) CO, LTD***

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**TOP MOTOR TECHNOLOGY (HUIZHOU) CO, LTD**

## 1. SCOPE

This specification defines the electrical and mechanical characteristics of the ☐ AC / ☒ DC Brush less (☐ Liquid State Ball / ☒ 2-Balls Bearing )axial flow fan, which is carefully designed and manufactured for your special needs by Dynatron Corporation.

## 2. ELECTRICAL CHARACTERISTICS

Items		Description		
1.	Rated Voltage	DC 12 V		
2.	Operating Voltage	10.8V~13.2V		
3.	PWM Frequency 25KHz	Duty Cycle D=0~20%	Duty Cycle D=50%	Duty Cycle D=100%
4.	Start Voltage	7V		
5.	Air Flow – At rated voltage zero static pressure (minimal value)	0.630m <sup>3</sup> / min (22.23CFM)	1.187m <sup>3</sup> / min (41.895CFM)	2.180m <sup>3</sup> / min (76.95CFM)
6.	Static Pressure – At rated voltage At zero air flow	1.068mm-H <sub>2</sub> O (0.042inch-H <sub>2</sub> O)	3.794mm-H <sub>2</sub> O (0.149inch-H <sub>2</sub> O)	12.798mm-H <sub>2</sub> O (0.504inch-H <sub>2</sub> O)
7.	Input Current (Max.)	0.10A	0.22A	0.75A
8.	Speed	1300RPM±200	2450RPM±10%	4500RPM±5%
9.	Acoustical Noise	23.95dBA	37.71dBA	50.91dBA
10.	Input Power	1.20W	2.64W	9.00W
11.	Insulation Resistance – Between Frame and Terminal	10 M ohm at DC 500 V		
12.	Dielectric Strength – Between Frame and Terminal	5 mA (Max.) @ AC 500 V 60 Hz 1 min.		
13.	Life – Continuous operating under normal temperature (25 °C or 77 °F)	70,000 hours		
14.	Rotation	Anticlockwise Air Discharged		
15.	Lead Wires	UL 1007, awg 28 or Equivalent “-”: Black; “+”: Yellow; “S”: Green. “PWM”: Blue.		



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## 3. MECHANICAL CHARACTERISTICS

Items		Description
1.	Dimension	Display as Drawing
2.	Frame	PC
3.	Impeller	PC
4.	Bearing System	Two ball Bearing
5.	Weight	100±10grams

## 4. ENVIRONMENTAL

Items		Description
1.	Operating Temperature	- 10 °C ~ + 65 °C (65 %RH)
2.	Storage Temperature	- 30 °C ~ + 70 °C (65 %RH)
3.	Vibration Test	Displacement Amplitude: 0.75mm(Equivalent 10G) Frequency Range: 10Hz<->55Hz/30SEC. Linear Scanning 120 Cycle Endurance Timer Per Axis: 30Min. Orientation:X,Y,Z.
4.	Drop Test	Motor withstands one free body drop from 30 cm in high onto 10 mm thickness of wooden board for each of the three faces in minimum packing condition.
5.	Acoustic Noise	23.95/37.71/50.91dBA – Curve (Max24.45/38.21/51.41dBA) Measuring Condition – Under rated voltage in semi-anechoic chamber equipment sound level meter. (Figure A.)

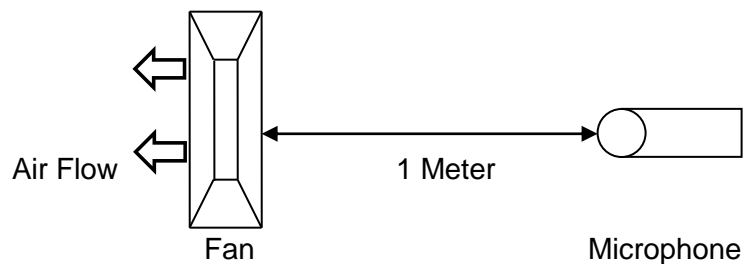


Figure A – Noise Level is measure at rated voltage in anechoic chamber in free air as above.



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## 5. PROTECTION

Items		Description
1.	Polarity Protection	For polarity error connection to power, the circuit withstands reversed connection between positive and negative leads.

## 6. ATTACHMENTS

- 6.1. Product Dimension
- 6.2. Frequency Generator Output
- 6.3. TUV Certificate
- 6.4. UL Certificate
- 6.5. Electrical Specifications for pwm production

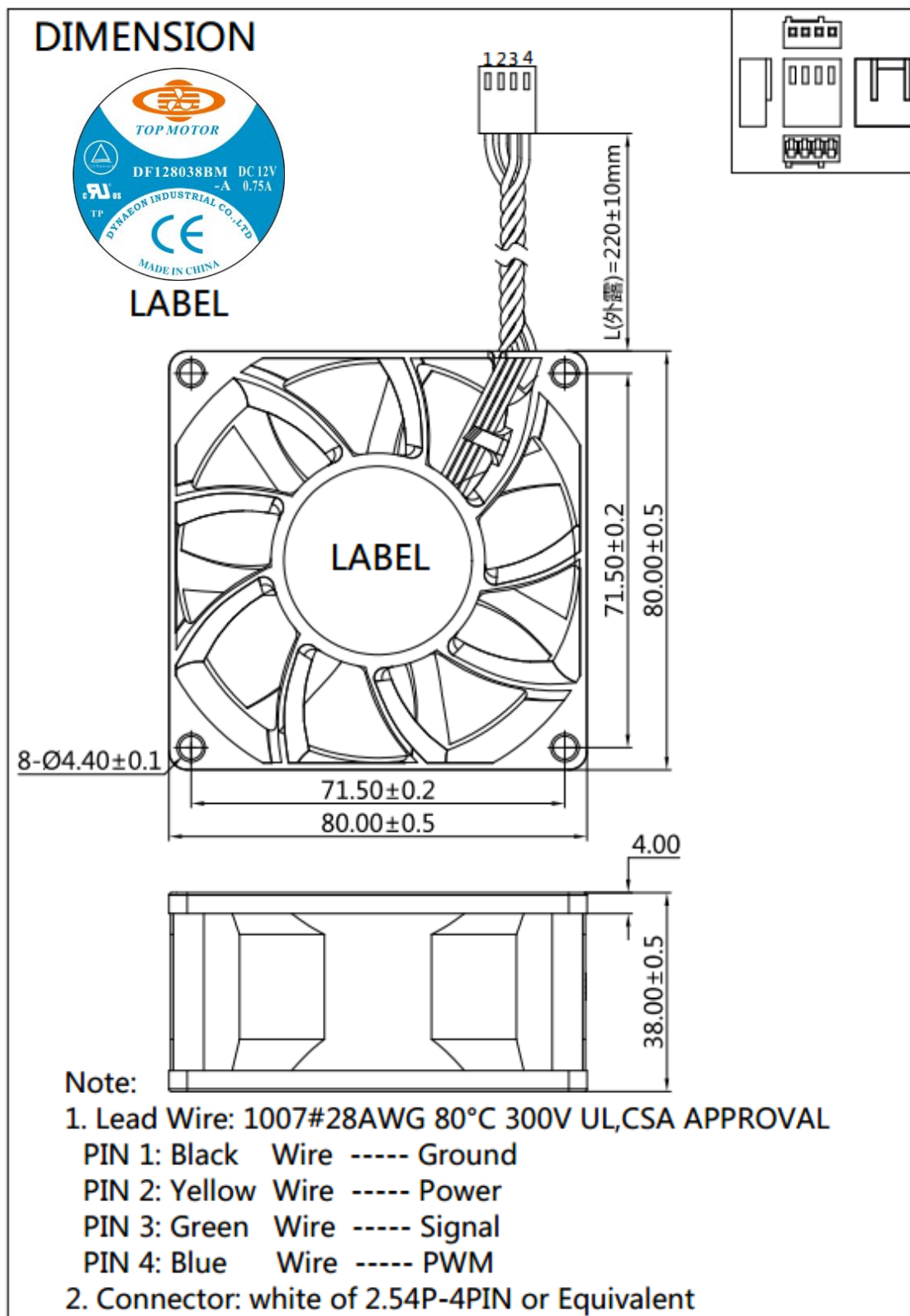


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## 6.1. Product Dimension





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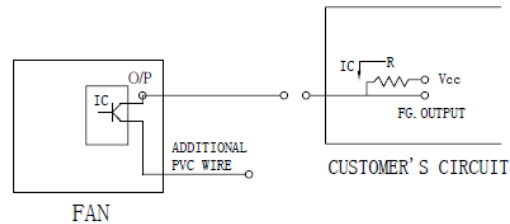
**TOP MOTOR TECHNOLOGY (HUIZHOU) CO, LTD**

## 6.2. Frequency Generator Output

### FREQUENCY GENERATOR O/P:

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

Electrical schematic:



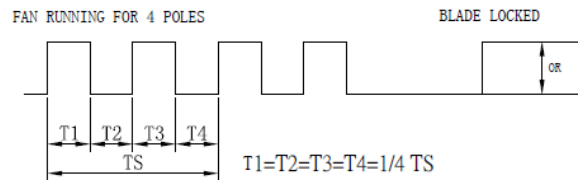
### CUSTOMER'S CIRCUIT

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

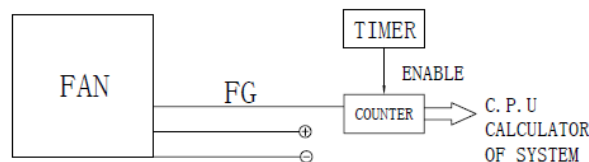
### • OUTPUT LEVEL:

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 FG. O/P through P/S circuit to increase the output voltage and result in a stable rotation speed.



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## 6.3. TUV Certificate

### Zertifikat

### Certificate



Zertifikat Nr. Certificate No.  
R 50064443

Blatt Page  
0011

Ihr Zeichen Client Reference  
8547300070/EMTEK

Unser Zeichen Our Reference  
ZTW1-CCO- 10013649 008

Ausstellungsdatum  
18.01.2008

Date of Issue  
(day/mo/yr)

Genehmigungsinhaber License Holder  
Dynaen Industrial Co., Ltd.  
8F, No. 35, 37, Lane 221  
Gang Cian Rd.  
Neihu, Taipei 114  
Taiwan

Fertigungsstätte Manufacturing Plant  
Dynaen Ind. Co., Ltd.  
Ta-Li Management Zone  
Ching-Hsi, Dongguan  
P.R. China

#### Prüfzeichen Test Mark



BAUART  
GEPRÜFT  
TYPE  
APPROVED

Geprüft nach Tested acc. to  
EN 60950-1:2001+A11

Zertifiziertes Produkt (Geräteidentifikation)  
Certified Product (Product Identification)

Lizenzentgelte - Einheit  
License Fee - Unit

Ventilator (DC Fan)

wie Blatt (as page) 01  
Ergänzung für Bezeichnung : DB127015 (X4) (X5) ZZZZ-A  
(Addition for Type Designation)  
Bezeichnung : DB (X1) (X2) (X3) (X4) (X5) - ZZZZ- (X6)  
(Type Designation)  
(X1) steht für (stands for) : 12  
(X2) steht für (stands for) : 80, 12  
(X3) steht für (stands for) : 15, 25  
(X4) steht für (stands for) : S, B, P, Q  
(X5) steht für (stands for) : U, H, M, L, E  
E steht für : A-Z, 0-9 oder (or)  
(stands for) freibleibend (blank)  
(X6) steht für (stands for) : A  
Nennspannung : DC 12V  
(Rated Voltage)  
Nennstrom : siehe Anlage  
(Rated Current) (see appendix)

1  
1  
1  
1  
1  
1  
1  
1  
8



ANLAGE (Appendix): 1

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde.  
Das Produkt entspricht den o.g. Anforderungen, die Herstellung wird überwacht.  
This certificate is based on our Testing and Certification Regulation. The product  
fulfills above mentioned requirements, the production is subject to surveillance.

Zertifizierungsstelle

TÜV Rheinland Product Safety GmbH, Am Grauen Stein, D-51105 Köln  
Tel.: (+49/221) 8 06 - 13 71 e-mail: cert-validity@de.tuv.com  
Fax: (+49/221) 8 06 - 39 35 http://www.tuv.com/safety

Dipl.-Ing. F. Stöckel



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## 6.4. UL Certificate



ONLINE CERTIFICATIONS DIRECTORY

### GPWV2.E157868 Fans, Electric - Component

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### Fans, Electric - Component

[See General Information for Fans, Electric - Component](#)

**DYNAEON INDUSTRIAL CO LTD**  
8TH FL 35 LANE 221 GANGCIAN RD  
NEIHU DIST  
TAIPEI, 114 TAIWAN

E157868

**DC fans**, Models D(F)1206(Z)(Y1)(X1), D(F)1207(Z)(Y1)(X1), where (F) may be F or C, (Z) may be SH, BH, BA, SM, BM, BB, SL, BL, BC, SD, BE, BF, SG, BI, BJ, SK, BN, BO, SP, BQ, BR, SS, BT, BU, SV, BW, BX, SY, BY or BZ, (Y1) may be "-", 0 through 9 or A through Z, (X1) may be 0 through 9 or A through Z.

Models DF248015(S)(X)(Y)(Z)(W), DF488015(S)(X)(Y)(Z)(W), where (S) may be S, B or P, (X) may be U, H, M or L, (Y) and (Z) may be any alphanumeric character, blank, "-" or any symbol, (W) may be seven any alphanumeric character, blank, "-" or any symbol.

Models DF121225(A)(B)(C), DF121225(A)E(C), DF241225(A)(B)(C), DF128015(A)U(C), DF128015(A)(B)(C), DF128025(A)U(C), DF128025(A)(B)(C), DF128025(A)E(C), DF248025(A)U(C), DF248025(A)(B)(C), DF129225(A)(B)(C), DF129225(A)E(C), DF249225(A)U(C), DF249225(A)(B)(C), DF126010(A)(B)(C), DF246025(A)U(C), DF246025(A)(B)(C), DF126025(A)U(C), DF126025(A)(B)(C), DF126025(A)E(C), DB126015BU(C), DB126015B(B)(C), DF123010(A)(B)(C), DF053010(A)(B)(C), DF127015(A)U(C), DF127015(A)(B)(C), DF245010(A)(B)(C), where (A) may be S, B, P or Q, (B) may be H, M or L, (C) may be xxxxxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models DF122510(X)(Y2)(Z)-(M), DF124020(X)(Y2)(Z)-(M), DF244020(X)(Y1)(Z)-(M), DF126025(X)(Y3)(Z)-(M), DF246025(X)(Y3)(Z)-(M), DF121225(X)(Y1)(Z)-(M), DF124028(X)(Y3)(Z)-(M), where (X) may be S, B, P, Q, (Y1) may be H, M or L, (Y2) may be U, H, M or L, (Y3) may be U, H, M, L or E, (Z) is alphanumeric combination of five digits and/or alphabets, may be A through Z, 0 through 9 or blank, (M) may be A or B.

Models DF054010(X)(Y2)(Z1)(Z2)-A, DF054010(X)L(Z1)(Z2)-B, DF124010(X)(Y2)(Z1)(Z2)-A, DF124010(X)L(Z1)(Z2)-B, DF244010(X)(Y2)(Z1)(Z2)-A, DF125015(X)(Y1)(Z1)(Z2)-A, DF125020(X)(Y3)(Z1)(Z2)-A, DF126015(X)(Y1)(Z1)(Z2)-A, DF246015(X)M(Z1)(Z2)-A, DF246015(X)L(Z1)(Z2)-A, DF128020(X)(Y1)(Z1)(Z2)-A, DF128020(X)L(Z1)(Z2)-B, DB127015(X)(Y2)(Z)-A series, where (X) may be S, B, P, Q, (Y1) may be H, M or L, (Y2) may be U, H, M or L, (Y3) may be H, M, L or E, (Z1) may be blank or 3, (Z2) is alphanumeric combination of four digits and/or alphabets, may be A through Z, 0 through 9 or blank, (Z) is alphanumeric combination of five digits and/or alphabets, may be A through Z, 0 through 9 or blank.

Models DF125010(X)(Y)(Z)-A, DF126020(X)(Y)(Z)-A, DF246020(X)(Y)(Z)-A, DF121525(X)(Y1)(Z)-A, DF121525(X)(Y2)(Z)-B series, Where (X) may be S, B, P or Q, (Y) may be H, M or L, (Y1) may be U, H or M, (Y2) may be L or E, (Z) is alphanumeric combination of five digits and/or alphabets, may be A through Z, 0 through 9 or blank.

Models DF128025(X)(a)(Y)-A, DF121225(X)(b)(Y)-C, DF121225(X)E(Y)-C, DF127720(X)(a)(Y)-A, DF121425(X)(c)(Y)-A, DF126010(X)E(Y)-A series, where (X) may be S, B, P, Q, (a) may be H, M, L or E, (b) may be M or L, (c) may be U, H, M, L or E, (Y) is alphanumeric combination of five digits and/or alphabets, may be A through Z, 0 through 9 or blank.

Models DF054010(X)(Y1)(Z1)(Z2)-C, DF124010(X)(Y2)(Z1)(Z2)-C, DF244010(X)(Y2)(Z1)(Z2)-C, DF124020BU(Z1)(Z2)-C, DF124020(X)(Y1)(Z1)(Z2)-C, DF124028BU(Z1)(Z2)-C, DF124028(X)(Y1)(Z1)(Z2)-C, DF126025BU(Z1)(Z2)-C, DF126025(X)(Y1)(Z1)(Z2)-C, DF127015BU(Z1)(Z2)-A, DF127015(X)(Y1)(Z1)(Z2)-A, DF128025BU(Z1)(Z2)-B, DF128025(X)(Y1)(Z1)(Z2)-B, DF129225BU(Z1)(Z2)-A, DF129225(X)(Y1)(Z1)(Z2)-A, DF121225BU(Z1)(Z2)-D, DF121225(X)(Y1)(Z1)(Z2)-D, DF121425(X)(Y1)(Z1)(Z2)-B, DB127015BU(Z1)(Z2)-B, DB127015(X)(Y1)(Z1)(Z2)-B, DB058015(X)(Y3)(Z1)(Z2)-A, where (X) may be S, B, P or Q, where (Y1) may be H, M, L or E, where (Y2) may be U, H, M, L or E, where (Y3) may be M or L, where (Z1) may be blank or 3, where (Z2) may be is alphanumeric combination of four digits and/or alphabets, may be A through Z, 0 through 9 or blank.

Models DB128015(X)(Y1)-(Z)-A, DF128038(X)(Y1)-(Z)-A, DB121225(X)(Y2)-(Z)-A, DF054010(X)(Y2)-(Z)-D, DF124010(X)(Y3)-(Z)-D, DF244010(X)(Y4)-(Z)-D, DF125010(X)(Y2)-(Z)-B, DF126010(X)(Y5)-(Z)-B series, where (X) may be S, B, P, Q, (Y1) may be U, H, M, L or E, (Y2) may be H, M or L, (Y3) may be U, M, L or E, (Y4) may be U, H, M or L, (Y5) may be H, M, L or E, (Z) is alphanumeric combination of five digits and/or alphabets, may be A through Z, 0 through 9 or blank.

**Electric fans**, Models DC0504, -1204, -1205, -1206, DF1204, -1208, -2408, -0504, -0505, -1205, -2406 followed by "S" or



# DYNATRON CORPORATION

## TOP MOTOR TECHNOLOGY (HUIZHOU) CO, LTD

"B", followed by two alphanumeric characters.

**Low voltage fans**, Models DB1206, DF1209, -1212, -2409, DH1204 followed by B or S, followed by two alphanumeric characters.



Marking: Company name or trademark **TOP MOTOR**, model designation and Recognized Component Mark for Canada,



Last Updated on 2008-02-18

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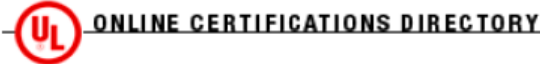






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**GPWV8.E157868**

**Fans, Electric Certified for Canada - Component**

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### Fans, Electric Certified for Canada - Component

[See General Information for Fans, Electric Certified for Canada - Component](#)

**DYNAEON INDUSTRIAL CO LTD**  
8TH FL 35 LANE 221 GANGCIAN RD  
NEIHU DIST  
TAIPEI, 114 TAIWAN

E157868

**DC fans,** Models D(F)1206(Z)(Y1)(X1), D(F)1207(Z)(Y1)(X1), where (F) may be F or C, (Z) may be SH, BH, BA, SM, BM, BB, SL, BL, BC, SD, BE, BF, SG, BI, BJ, SK, BN, BO, SP, BQ, BR, SS, BT, BU, SV, BW, BX, SY, BY or BZ, (Y1) may be "-", 0 through 9 or A through Z, (X1) may be 0 through 9 or A through Z.

Models DF248015(S)(X)(Y)(Z)(W), DF488015(S)(X)(Y)(Z)(W), where (S) may be S, B or P, (X) may be U, H, M or L, (Y) and (Z) may be any alphanumeric character, blank, "-" or any symbol, (W) may be seven any alphanumeric character, blank, "-" or any symbol.

Models DF121225(A)(B)(C), DF121225(A)E(C), DF241225(A)(B)(C), DF128015(A)U(C), DF128015(A)(B)(C), DF128025(A)U(C), DF128025(A)(B)(C), DF128025(A)E(C), DF248025(A)U(C), DF248025(A)(B)(C), DF129225(A)(B)(C), DF129225(A)E(C), DF249225(A)U(C), DF249225(A)(B)(C), DF126010(A)(B)(C), DF246025(A)U(C), DF246025(A)(B)(C), DF126025(A)U(C), DF126025(A)(B)(C), DF126025(A)E(C), DB126015BU(C), DB126015B(B)(C), DF123010(A)(B)(C), DF053010(A)(B)(C), DF127015(A)U(C), DF127015(A)(B)(C), DF245010(A)(B)(C), where (A) may be S, B, P or Q, (B) may be H, M or L, (C) may be xxxxxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models DF122510(X)(Y2)(Z)-(M), DF124020(X)(Y2)(Z)-(M), DF244020(X)(Y1)(Z)-(M), DF126025(X)(Y3)(Z)-(M), DF246025(X)(Y3)(Z)-(M), DF121225(X)(Y1)(Z)-(M), DF124028(X)(Y3)(Z)-(M), where (X) may be S, B, P, Q, (Y1) may be H, M or L, (Y2) may be U, H, M or L, (Y3) may be U, H, M, L or E, (Z) is alphanumeric combination of five digits and/or alphabets, may be A through Z, 0 through 9 or blank, (M) may be A or B.

Models DF054010(X)(Y2)(Z1)(Z2)-A, DF054010(X)L(Z1)(Z2)-B, DF124010(X)(Y2)(Z1)(Z2)-A, DF124010(X)L(Z1)(Z2)-B, DF244010(X)(Y2)(Z1)(Z2)-A, DF125015(X)(Y1)(Z1)(Z2)-A, DF125020(X)(Y3)(Z1)(Z2)-A, DF126015(X)(Y1)(Z1)(Z2)-A, DF246015(X)M(Z1)(Z2)-A, DF246015(X)L(Z1)(Z2)-A, DF128020(X)(Y1)(Z1)(Z2)-A, DF128020(X)L(Z1)(Z2)-B, DB127015(X)(Y2)(Z)-A series, where (X) may be S, B, P, Q, (Y1) may be H, M or L, (Y2) may be U, H, M or L, (Y3) may be H, M, L or E, (Z1) may be blank or 3, (Z2) is alphanumeric combination of four digits and/or alphabets, may be A through Z, 0 through 9 or blank, (Z) is alphanumeric combination of five digits and/or alphabets, may be A through Z, 0 through 9 or blank.

Models DF125010(X)(Y)(Z)-A, DF126020(X)(Y)(Z)-A, DF246020(X)(Y)(Z)-A, DF121525(X)(Y1)(Z)-A, DF121525(X)(Y2)(Z)-B series, Where (X) may be S, B, P or Q, (Y) may be H, M or L, (Y1) may be U, H or M, (Y2) may be L or E, (Z) is alphanumeric combination of five digits and/or alphabets, may be A through Z, 0 through 9 or blank.

Models DF128025(X)(a)(Y)-A, DF121225(X)(b)(Y)-C, DF121225(X)E(Y)-C, DF127720(X)(a)(Y)-A, DF121425(X)(c)(Y)-A, DF126010(X)E(Y)-A series, where (X) may be S, B, P, Q, (a) may be H, M, L or E, (b) may be M or L, (c) may be U, H, M, L or E, (Y) is alphanumeric combination of five digits and/or alphabets, may be A through Z, 0 through 9 or blank.

Models DF054010(X)(Y1)(Z1)(Z2)-C, DF124010(X)(Y2)(Z1)(Z2)-C, DF244010(X)(Y2)(Z1)(Z2)-C, DF124020BU(Z1)(Z2)-C, DF124020(X)(Y1)(Z1)(Z2)-C, DF124028BU(Z1)(Z2)-C, DF124028(X)(Y1)(Z1)(Z2)-C, DF126025BU(Z1)(Z2)-C, DF126025(X)(Y1)(Z1)(Z2)-C, DF127015BU(Z1)(Z2)-A, DF127015(X)(Y1)(Z1)(Z2)-A, DF128025BU(Z1)(Z2)-B, DF128025(X)(Y1)(Z1)(Z2)-B, DF129225BU(Z1)(Z2)-A, DF129225(X)(Y1)(Z1)(Z2)-A, DF121225BU(Z1)(Z2)-D, DF121225(X)(Y1)(Z1)(Z2)-D, DF121425(X)(Y1)(Z1)(Z2)-B, DB127015BU(Z1)(Z2)-B, DB127015(X)(Y1)(Z1)(Z2)-B, DB058015(X)(Y3)(Z1)(Z2)-A, where (X) may be S, B, P or Q, where (Y1) may be H, M, L or E, where (Y2) may be U, H, M, L or E, where (Y3) may be M or L, where (Z1) may be blank or 3, where (Z2) may be is alphanumeric combination of four digits and/or alphabets, may be A through Z, 0 through 9 or blank.

Models DB128015(X)(Y1)-(Z)-A, DF128038(X)(Y1)-(Z)-A, DB121225(X)(Y2)-(Z)-A, DF054010(X)(Y2)-(Z)-D, DF124010(X)(Y3)-(Z)-D, DF244010(X)(Y4)-(Z)-D, DF125010(X)(Y2)-(Z)-B, DF126010(X)(Y5)-(Z)-B series, where (X) may be S, B, P, Q, (Y1) may be U, H, M, L or E, (Y2) may be H, M or L, (Y3) may be U, M, L or E, (Y4) may be U, H, M or L, (Y5) may be H, M, L or E, (Z) is alphanumeric combination of five digits and/or alphabets, may be A through Z, 0 through 9 or blank.

**Electric fans,** Models DC0504, -1204, -1205, -1206, DF0504, -0505, -1204, -1205, -1208, -2406, -2408 followed by "S" or



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"B", followed by two alphanumeric characters.

**Low voltage fans**, Models DB1206, DF1209, -1212, -2409, DH1204 followed by B or S, followed by two alphanumeric characters.



Marking: Company name or trademark **TOP MOTOR**, model designation and Recognized Component Mark for Canada,



Last Updated on 2008-02-18

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## 6.5. Electrical Specifications for pwm production

USA Dynatron Corp.

### Electrical Specifications for PWM production

#### Voltage

Fan operating voltage shall be within the range 12V $\pm$ 1.2V.

#### Current

Peak fan current draw during start-up operation(with 13.2V applied,with fan operating in the free stream condition)shall not exceed 2.0 A.

Fan current spike during start-up operation(with 13.2V applied with fan operating in the free stream condition)shall be allowed to exceed 1.0 A for a duration of no greater than 1.0 sec.

#### Tachometer Output Signal

Fan shall provide tachometer output signal with the following characteristics:

- \* Two pulses per revolution
- \* Open-collector or open-drain type output
- \* Motherboard will have a pull up to 12V, maximum 13.2V

#### PWM Control Input Signal

The following requirements are measured at the PWM(control) pin of the fan cable

connector:PWM Frequency:Target frequency 25kHz,

acceptable operational range 21 kHz to 28 Khz

Maximum voltage for logic low:VIL=0.8V

Absolute maximum current sourced:Imax=5mA(short circuit current)

Absolute maximum voltage level:Vmax=5.25V(open circuit voltage)

#### Fan Speed Control

##### 1.1Maximum Fan Speed Requirements

The maximum fan speed shall be specified for the fan model by the vendor and correspond to 100% duty cycle PWM signal input.

##### 1.2 Minimum Fan Speed Requirements

The vendor shall specify the minimum RPM and the corresponding PWM duty cycle. This specified minimum RPM shall be 30% of maximum RPM or less.The fan shall be able to start and run at this RPM. To allow a lower specified minimum RPM,it is acceptable to provide a higher PWM duty cycle to the fan motor for a short period of time for startup conditions.This pulse should not exceed 30% maximum RPM and should last no longer than 2 seconds.



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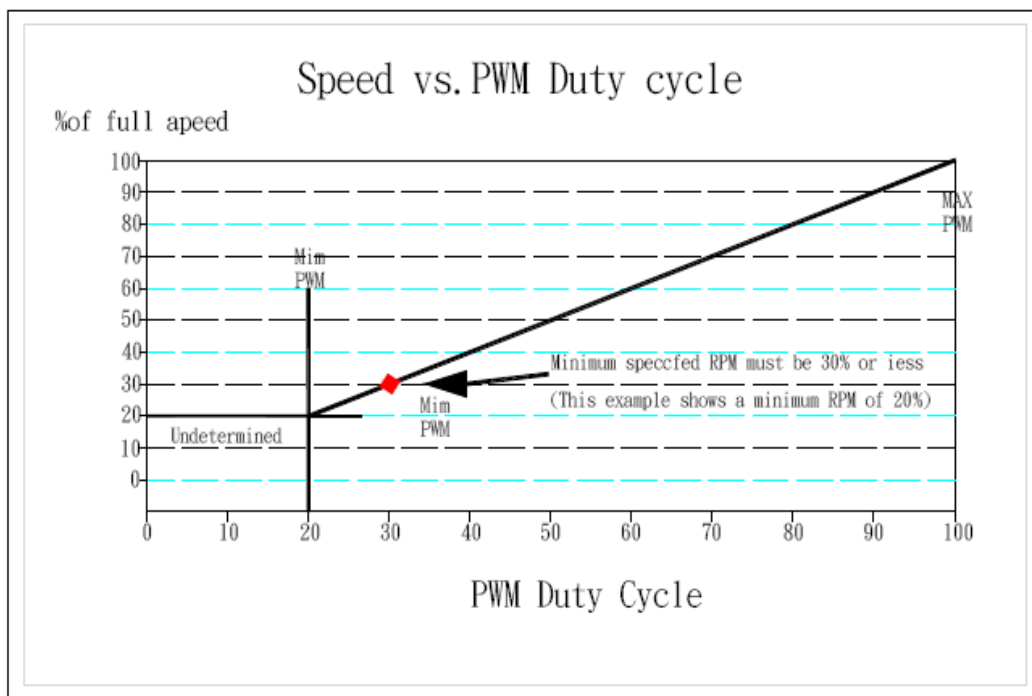
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USA Dynatron Corp.

### 1.3 Fan Speed Response PWM Control Input Signal

The PWM input shall be delivered to the fan through the control signal on Pin4. Fan speed response to this signal shall be a continuous and monotonic of the duty cycle of the signal, from 100% to the minimum specified RPM. The fan RPM (as a percentage of maximum RPM) should match the PWM duty cycle within  $\pm 10\%$ . If no control signal is present the fan shall operate at maximum RPM.

Figure 1 Fan speed Response to PWM Control input Signal



### 1.4 Operation Below Minimum RPM

For all duty cycles less than the minimum duty cycle, the RPM shall not be greater than the minimum RPM. The following graphs and definitions show three recommended solutions to handle PWM duty cycles that are less than the minimum operational PWM, as a percentage of maximum.

Reference resource by Intel's 4-wire PWM Fan controlled specification.