



## ***NEW PRODUCT SPEC SHEET***

# **Model Number: R24**

- Recommend for Intel® Xeon® E5-2600 and 4600 Series, Socket LGA2011
- **For Narrow ILM Only**
- Active Cooler by Side-Blowing Cooling for 2U Server and up

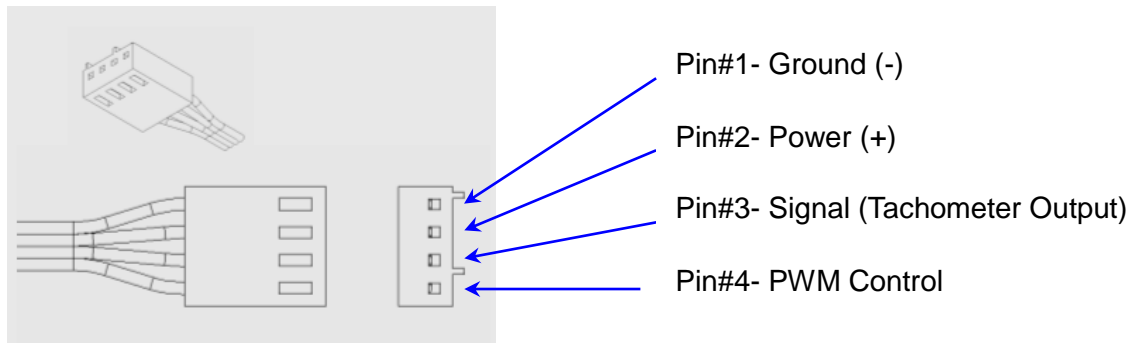
### **Overall Specification:**

- Dimension: 112 x 84 x 67mm
- Weight: 400g±5g
- 6028 Side-Blow Fan with PWM Function
- Material: Aluminum Stacked Fin with Heat Pipes directly contact CPU
- Convenient Heat Sink Captive Mounting
- Thermal Grease Shin-Etsu 7762 Pre-printed
- Support CPU Power up to 165 Watts Heat Dissipation

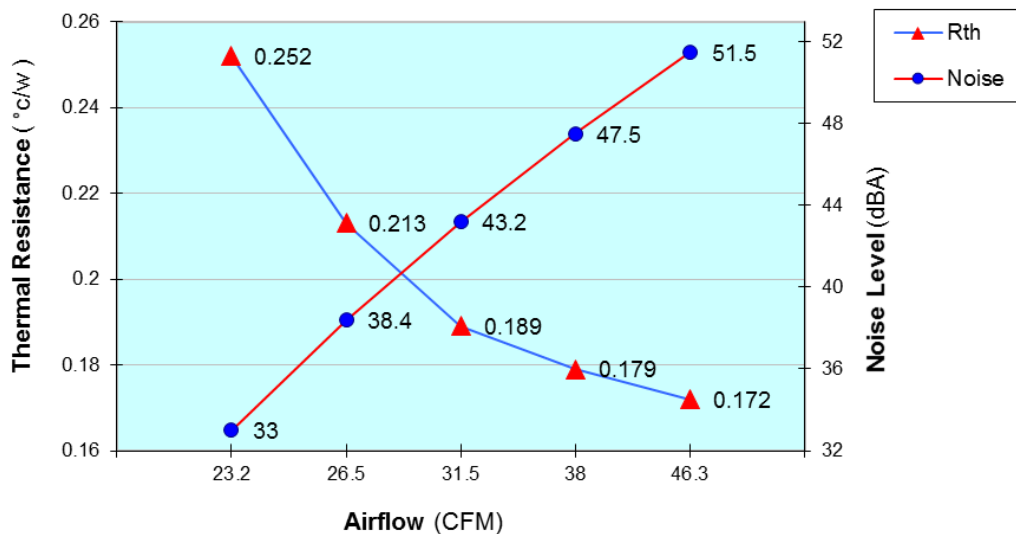
### **Fan Specification:**

- Model Number: DF126028BM - PWM
- Dimension: 60 x 60 x 28 mm
- Bearing: Double-Ball
- Rated Voltage: 12V
- Rated Speed:
  - At Duty Cycle 0~20% : 1300±300 RPM
  - At Duty Cycle 50% : 3500±10% RPM
  - At Duty Cycle 100% : 7000±10% RPM
- Rated Input Power:
  - At Duty Cycle 0~20% : 0.60 W
  - At Duty Cycle 50% : 1.68 W
  - At Duty Cycle 100% : 9.60 W

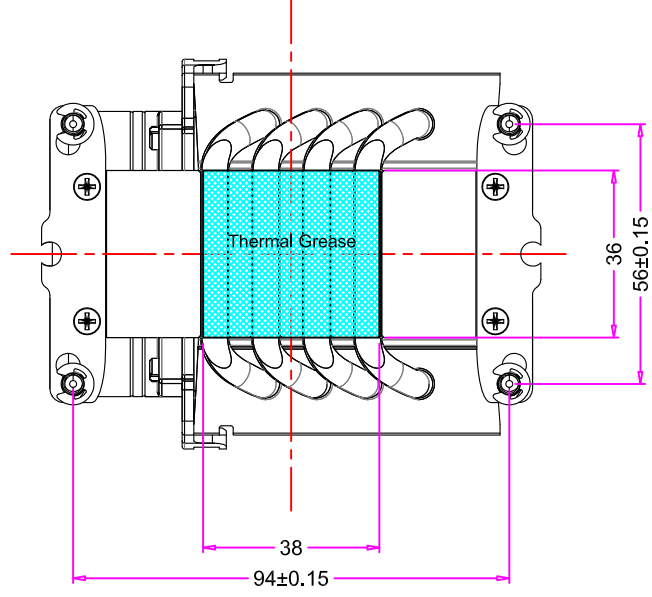
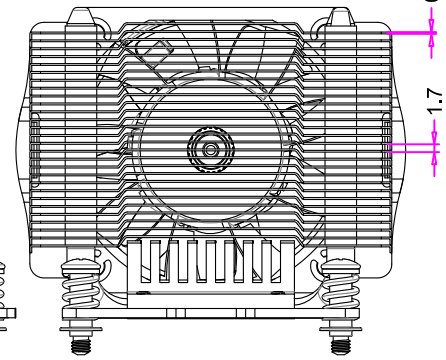
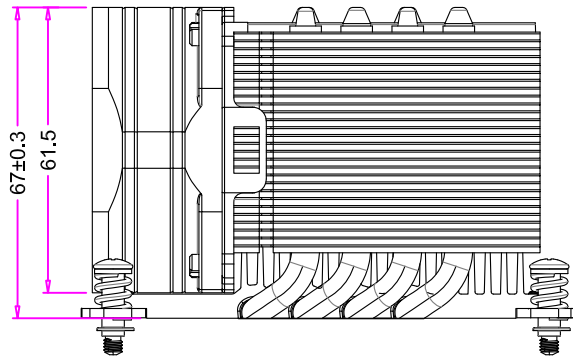
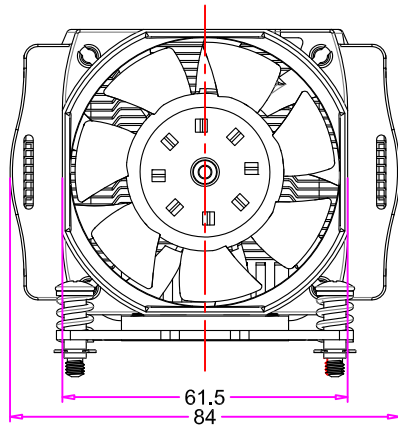
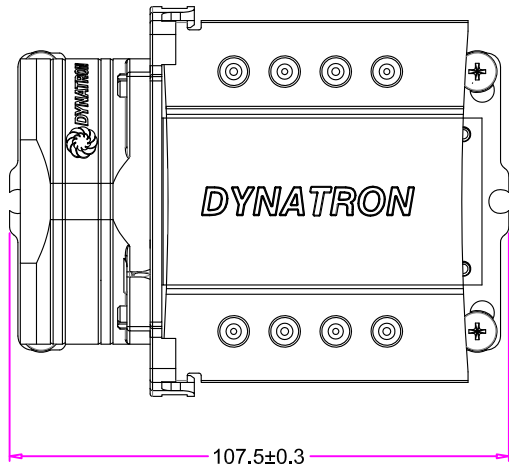
- Rated Airflow:
  - At Duty Cycle 0~20% : 8.10 CFM
  - At Duty Cycle 50% : 20.26 CFM
  - At Duty Cycle 100% : 40.53 CFM
- Rated Static Pressure:
  - At Duty Cycle 0~20% : 0.57 mm-H<sub>2</sub>O
  - At Duty Cycle 50% : 3.57 mm-H<sub>2</sub>O
  - At Duty Cycle 100% : 14.30 mm-H<sub>2</sub>O
- Rated Acoustical Noise:
  - At Duty Cycle 0~20% : 17.0 dBA
  - At Duty Cycle 50% : 31.9 dBA
  - At Duty Cycle 100% : 51.2 dBA
- Lead Wire Pin Out Diagram :



### Active Cooler R24 Cooling Performance VS. Fan Speed & Noise:



REV#	DESCRIPTION	CHECKER	DATE
0.0	INITIAL RELEASE	LANG	01/09/13
1.0	MODIFY METAL BRACKET, C-4	LANG	11/25/13



	NAME	DATE
DRAWN BY	enr	11 / 25 / 2013
CHECKED BY	LANG	11 / 25 / 2013
ENG. APPROVED		
MFG. APPROVED	-	-



DYNATRON CORPORATION

TOP MOTOR

TITLE: **2U Active Cooler R24**  
Overall Dimension Drawing

**CONFIDENTIAL DOCUMENT**  
THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO DYNATRON CORPORATION AND DYNAEON INDUSTRIAL CO., LTD. ANY REPRODUCTION, DISCLOSURE, OR USE OF THIS DRAWING IS EXPRESSLY PROHIBITED EXCEPT AS DYNATRON CORPORATION AND DYNAEON INDUSTRIAL CO., LTD. MAY OTHERWISE AGREE TO IN WRITING.

VIEW	
UNITS	MM

DWG. No: **DYN-DM-R24**

REV. **1.0**

**CONFIDENTIAL DOCUMENT**

THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO DYNATRON CORPORATION AND DYNAEON INDUSTRIAL CO., LTD. ANY REPRODUCTION, DISCLOSURE, OR USE OF THIS DRAWING IS EXPRESSLY PROHIBITED EXCEPT AS DYNATRON CORPORATION AND DYNAEON INDUSTRIAL CO., LTD. MAY OTHERWISE AGREE TO IN WRITING.

**ASSEMBLY PARTS**

REV#	DESCRIPTION	CHECKER	DATE
0.0	Initial Release	LANG	01/09/2013
1.0	Heatsink Bracket Design Change	LANG	11/25/2013
2.0	Update Fan Spec to BM, D-6	LANG	08/10/2016

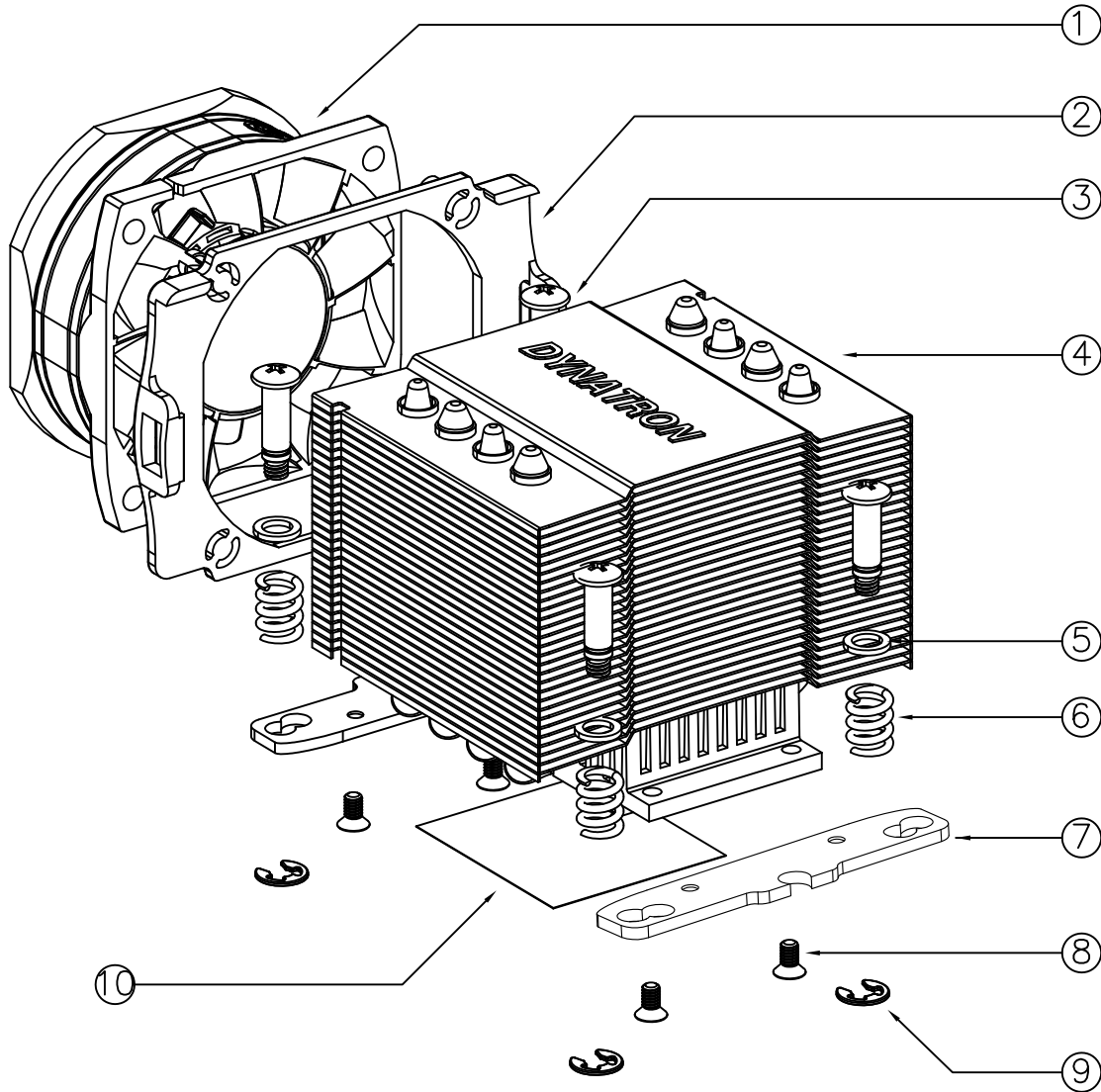
A

B

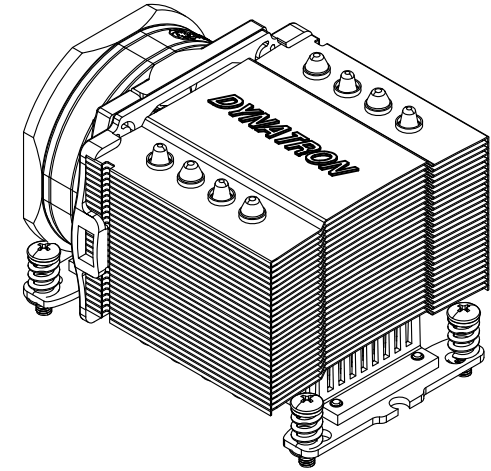
C

D


E



**WHOLE SET OF COOLER**



10	Thermal Grease, Pre-Printed	Shin-Etsu, 7762	1
9	C-ring	Steel	4
8	Screw, Heatsink Bracket	Steel	4
7	Bracket	SK7, Thk 2.0mm	2
6	Spring	SWP (940G)	4
5	Washer	Steel	4
4	Heatsink, Stacked Fin	Aluminum + Heatpipe	1
3	Screw, M4 x 0.7	Steel (890G)	4
2	Fan Bracket	Plastic	1
1	Fan, DF126028BM-PWMG, 7000RPM	Plastic	1
Item#	Description	Material	QTY.

DATE	NAME	 <b>DYNATRON CORPORATION</b>	
DRAWN 08/10/16	Engr.	<b>TITLE:</b> 2U Active Cooler <b>R24</b> BOM & Exploded Assembly Drawing	
CHECKED 08/10/16	Lang		
ENG. APPR.			
MFG. APPR.			
Q.A.		<b>DWG. No:</b> DYN-EP-R24	
COMMENTS:		<b>REV</b> 2.0	

**Notes:**

1. The figure is for reference only, and not for scale
2. Overall dimension: 112 x 84 x 67mm
3. Overall weight 400g

A

B

C

D

E

1

2

3

4

5

6

7

8



# DYNATRON CORPORATION

TOP MOTOR TECHNOLOGY (HUIZHOU) CO,LTD

## Specification for Approval

Customer:		
Model Number:	DF126028BM (60*60*28mm)	
Part Number:	LE06280001/LF06280001	
Issued Date:	Thursday, May 12, 2016	
Version:	A	
Customer Approval		
Approval:	Check:	
Corporate Headquarters <b>Dynatron Corporation</b> 33200 Western Avenue Union City, CA 94587 U.S.A. Tel: 510-498-8888 Fax: 510-498-8488	<i>Taipei Office</i> <i>(Taiwan, R.O.C.)</i> 8F, No. 35,Lane:221 Gang Cian. Road, Taipei, Taiwan, R.O.C. Tel: 886-2-27995799 (Rep.) Fax: 886-2-2799-9577	Manufactory <b>TOP MOTOR</b> <b>TECHNOLOGY(HUI</b> <b>ZHOU)CO,LTD</b> Baishi Village, QiuchangTown, Huiyang Dist,HuizhouCity,Guangdong Province,P.R.China Tel: 86-752-822-8000 (Rep.) Fax: 86-752-822-8999
Approval:	Check:	Handler:
Simon Wang	-	Hui mei



# DYNATRON CORPORATION

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

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# DYNATRON CORPORATION

## TOP MOTOR TECHNOLOGY (HUIZHOU) CO,LTD

### 1. SCOPE

This specification defines the electrical and mechanical characteristics of the □ AC / ■ DC Brush less (□Liquid State /■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	10.8 V ~ 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)	0.229m <sup>3</sup> /z min (8.10CFM)	0.573m <sup>3</sup> / min (20.26CFM)	1.148m <sup>3</sup> / min (40.53CFM)
6.	Static Pressure – At rated voltage At zero air flow	0.57mm-H <sub>2</sub> O (0.022inch-H <sub>2</sub> O)	3.57mm-H <sub>2</sub> O (0.140 inch-H <sub>2</sub> O)	14.30mm-H <sub>2</sub> O (0.562inch-H <sub>2</sub> O)
7.	Input Current (Max.)	0.05A	0.14A	0.80A
8.	Speed (Max.)	1300RPM±300	3500RPM±10%	7000RPM±10%
9.	Acoustical Noise	17.00dBA	31.93dBA	51.20dBA
10.	Input Power	0.60W	1.68W	9.6W
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 (40°C or 104 °F)	70,000 hours		
14.	Rotation	Anticlockwise Air Discharged		
15.	Lead Wires	UL 2468 awg 28or Equivalent “-”: Black; “+”: Black;”s”: Black. ”PWM”: Black.		



# DYNATRON CORPORATION

## TOP MOTOR TECHNOLOGY (HUIZHOU) CO,LTD

### 3. MECHANICAL CHARACTERISTICS

Items		Description
1.	Dimension	Display as Drawing
2.	Frame	PBT UL94V-0 (Black GP)
3.	Impeller	PBT UL94V-0 (Black GP)
4.	Bearing System	Two Balls Bearing
5.	Weight	68±5grams

### 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	51.20dBA – Curve (Max51.70dBA) Measuring Condition – Under rated voltage in semi-anechoic chamber equipment sound level meter. (Figure A.)

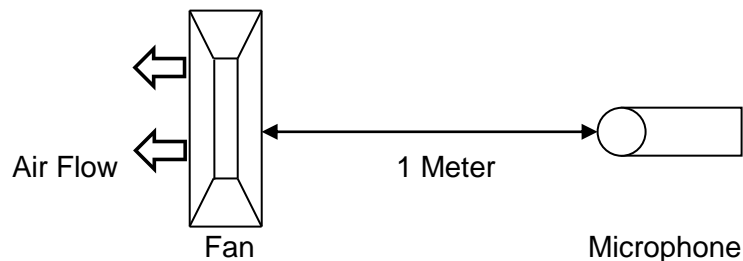


Figure A – Noise Level is measure at rated voltage in anechoic chamber in free air as above.





# DYNATRON CORPORATION

*TOP MOTOR TECHNOLOGY (HUIZHOU) CO,LTD*

## 5. PROTECTION

Items		Description
1.	Polarity Protection	For polarity error connection to power, the circuit withstands reversed connection between positive and negative leads.
2.	Locked Rotor Protection	Motor winding protects the motor from damage in 72 hours of locked rotor condition at rated voltage.

## 6. ATTACHMENTS

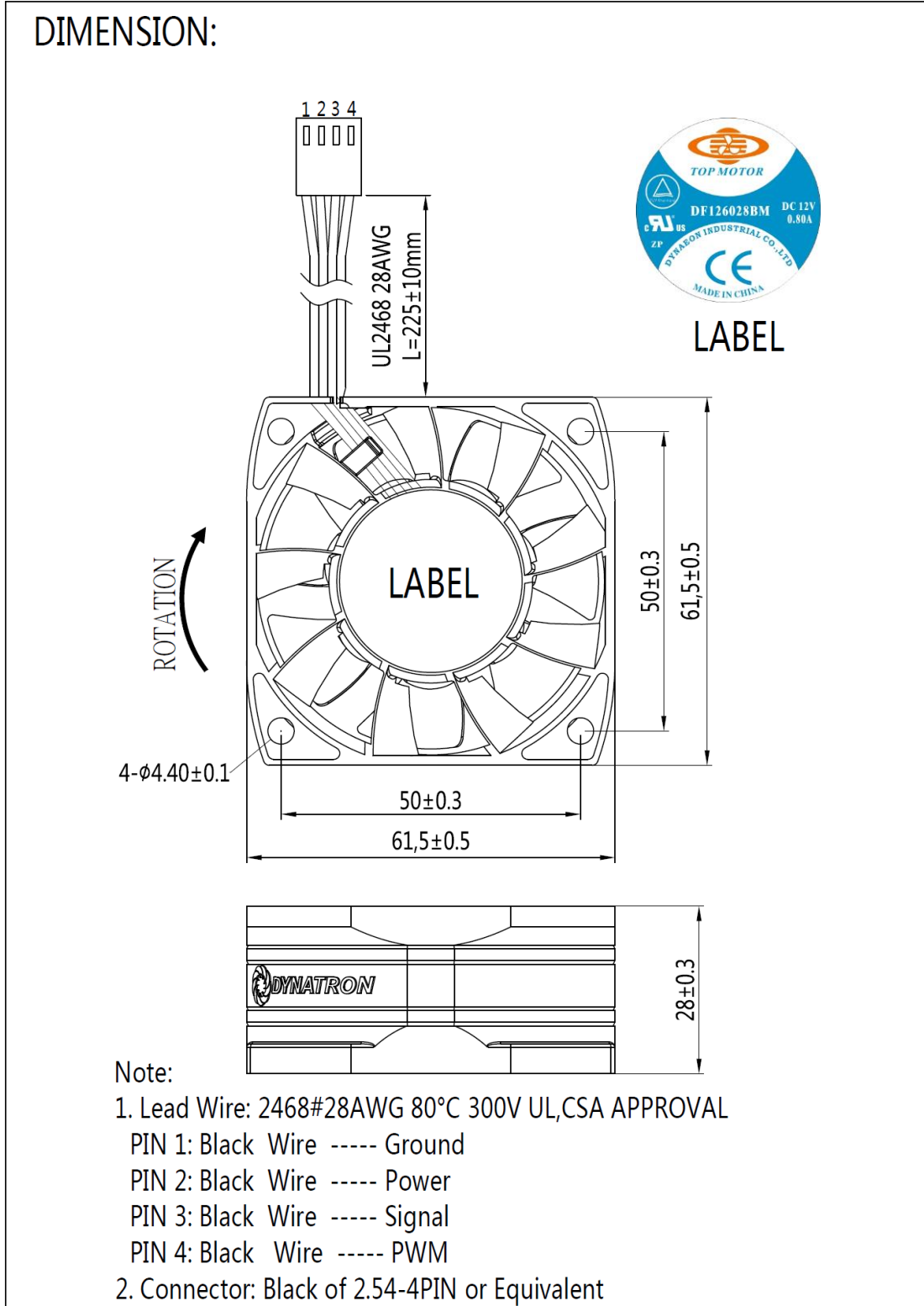
- 6.1. Product Dimension
- 6.2. Frequency Generator Output
- 6.3.TUV Certificate
- 6.4. UL Certificate
- 6.5. Electrical Specifications for pwm production



# DYNATRON CORPORATION

## TOP MOTOR TECHNOLOGY (HUIZHOU) CO.,LTD

### 6.1. Product Dimension





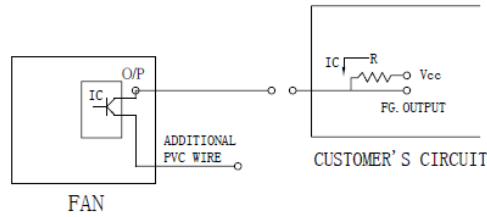
# DYNATRON CORPORATION

## TOP MOTOR TECHNOLOGY (HUIZHOU) CO, LTD

### 6.2. Frequency Generator Output

#### FREQUENCY GENERATOR O/P:

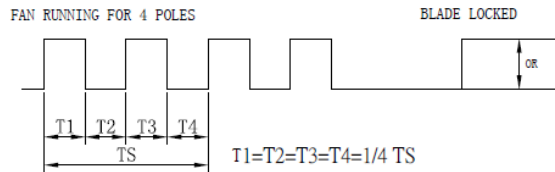
Frequency generator function is activated by an internal IC for customer's application.  
Electrical schematic:



#### CUSTOMER'S CIRCUIT

$V_{cc}$  = 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)

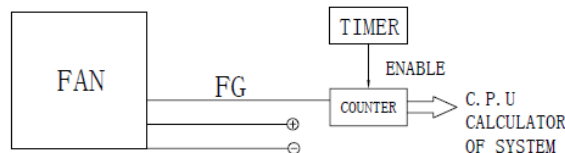
$TS=60/N$  (Sec)

\* Voltage level after blade locked

#### • OUTPUT LEVEL:

High =  $V_{cc}$  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 FG. O/P through P/S circuit to increase the output voltage and result in a stable rotation speed.



# DYNATRON CORPORATION

## TOP MOTOR TECHNOLOGY (HUIZHOU) CO, LTD

### 6.3. TUV Certificate

Industrial Services, Mobility and Transport,  
Product Safety and Quality, Education and  
Consulting, IT Services and Innovation



Dynaon Industrial Co., Ltd.  
Mr. Jack Lee, Supervisor  
QC Dept.  
8F, No. 35, 37, Lane 221  
Gang Cian Rd.  
Neihu, Taipei 114  
Taiwan, R.O.C.

Date : 08.03.2013  
Our ref. : YML ZTW1  
Your ref.: 8143502953/JL270213

**Ref : R TÜV-Mark Approval**

Type of Equipment : DC Fan  
Model Designation : See Certificate  
Certificate No. : R 50064443 0015  
Report No. : 10013649 012

Dear Mr. Jack Lee,

The above specified equipment has been tested and found to be in accordance with the relevant requirements.


Please find enclosed your certificate as specified above.

If cancellation of the certificate is submitted by 15 November in a given year, no fee will be charged for the following year.

The certificate is issued with the reservation that the license holder applies all information required in § 6 of the ProdSG related to name and address of the manufacturer or his authorized representative / importer, including their respective contact addresses on the product prior to marketing of the product in the European Economic Area.

With kind regards,

Certification Body

  
Jerry F. R. Yang

Enclosure

#### TÜV RHEINLAND TAIWAN LTD.

11F, No. 758, Sec. 4, Bade Rd.,  
Songshan Dist., Taipei City 105,  
Taiwan R. O. C.  
Tel. (02) 2172-7000  
Fax (02) 2528-0018  
<http://www.tuv.com>

TAICHUNG BRANCH:  
No. 9, Lane 36, Sec. 3, Minsheng Rd.,  
Daya Dist., Taichung City 428  
Taiwan, R. O. C.  
Tel. (04) 2560-2998  
Fax (04) 2566-3598



# DYNATRON CORPORATION

## TOP MOTOR TECHNOLOGY (HUIZHOU) CO., LTD

### Zertifikat Certificate



Zertifikat Nr. *Certificate No.*  
R 50064443

Blatt *Page*  
0015

Ihr Zeichen <i>Client Reference</i>	Unser Zeichen <i>Our Reference</i>	Ausstellungsdatum	<i>Date of Issue</i> (day/month/year)
8143502953/JL270213	ZTW1-YML- 10013649 012	08.03.2013	

**Genehmigungsinhaber *License Holder***  
Dynaeon Industrial Co., Ltd.  
8F, No. 35, 37, Lane 221  
Gang Cian Rd.  
Neihu, Taipei 114  
Taiwan, R.O.C.

**Fertigungsstätte *Manufacturing Plant***  
Top Motor Technology (Huizhou)  
Co., Ltd.  
Baishi Village,  
Qiuchang Town, Huiyang District  
Huizhou City, Guangdong  
P.R. China

**Prüfzeichen *Test Mark***

**Geprüft nach *Tested acc. to***  
EN 60950-1:2006+A11+A1+A12



**Zertifiziertes Produkt (Geräteidentifikation)**  
***Certified Product (Product Identification)***

**Lizenzentgelte - Einheit**  
***License Fee - Unit***

Ventilator (DC Fan)

wie Blatt (as page) 01

Änderung  
(Change)

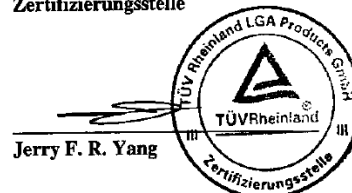
Prüfgrundlage : siehe oben  
(Test Requirement) (see above)

ANLAGE (Appendix): 1

*Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde und es bestätigt die Konformität des Produktes mit den oben genannten Standards und Prüfgrundlagen. Zusätzliche Anforderungen in Ländern, in denen das Produkt in Verkehr gebracht werden soll, müssen zusätzlich betrachtet werden. Die Herstellung des zertifizierten Produktes wird überwacht.*  
*This certificate is based on our Testing and Certification Regulation and states the conformity of the product with the standards and testing requirements as indicated above. Any additional requirements in countries where the product is going to be marketed have to be considered additionally. The manufacturing of the certified product is subject to surveillance.*

**TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg**  
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>

Zertifizierungsstelle





# DYNATRON CORPORATION

## TOP MOTOR TECHNOLOGY (HUIZHOU) CO., LTD

**Zertifikat**

**Certificate**



Zertifikat Nr. *Certificate No.*  
R 50064443

Blatt *Page*  
0007

Ihr Zeichen <i>Client Reference</i>	Unser Zeichen <i>Our Reference</i>	Ausstellungsdatum	<i>Date of Issue</i> (day/mo/yr)
12046290/LC Tech	ZTW1-CCO- 10013649 006	07.05.2007	

**Genehmigungsinhaber *License Holder***  
Dynaeon Industrial Co., Ltd.  
8F, No. 35, 37, Lane 221  
Gang Cian Rd.  
Neihu, Taipei 114  
Taiwan, R.O.C.

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

**Prüfzeichen *Test Mark***

**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 (Addition)

Bezeichnung : DP(X1)(X2)(X3)(X4)(X5)ZZZZZ-(X6)  
(Type Designation)

(X1) steht für (stands for): 05, 12, 24	
(X2) steht für (stands for): 12, 14, 15, 25, 40, 50, 60, 70, 77, 80, 92	1
(X3) steht für (stands for): 10, 15, 20, 25, 28	1
(X4) steht für (stands for): S, B, P, Q	
(X5) steht für (stands for): U, H, M, L, E	
(X6) steht für (stands for): A, B, C, D	1
Z steht für (stands for): A-Z, 0-9 oder (or) freibleibend (blank)	

Nennspannung : DC 5V ((X1)= 05); DC 12V ((X1)= 12);  
(Rated Voltage) DC 24V ((X1)= 24)  
Nennstrom : siehe Anlage  
(Rated Current) (see appendix)

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



# DYNATRON CORPORATION

## TOP MOTOR TECHNOLOGY (HUIZHOU) CO, LTD

### 6.4.UL Certificate

15-10-29

GPWV2.E157868 - Fans, Electric - Component



ONLINE CERTIFICATIONS DIRECTORY

#### GPWV2.E157868 Fans, Electric - Component

[Page Bottom](#)

#### 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.

Series 7515: Models DB127515(X)U-ZZZZZ-(A), DB127515(X)H-ZZZZZ-(A), DB127515(X)M-ZZZZZ-(A), DB127515(X)L-ZZZZZ-(A).

Series 9225: Models DF129225(X)U-ZZZZZ-(A), DF129225(X)H-ZZZZZ-(A), DF129225(X)M-ZZZZZ-(A), DF129225(X)L-ZZZZZ-(A).

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# DYNATRON CORPORATION

## TOP MOTOR TECHNOLOGY (HUIZHOU) CO,LTD

15-10-29

GPWW2.E157868 - Fans, Electric - Component

Models DB128015(X)(Y)-(Z)-B and DF126028(X)(W)-(Z)-A series, where (X) may be S, B, P or Q; (Y) may be U, H, M or L; (W) may be U, H, M, L or E; (Z) stands for five variables, each may be A through Z, 0 through 9 or blank.


Model DF124028(X)(Y)-(Z)-D, where (X) may be S, B, P or Q; (Y) may be U, H, M, L, 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 "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.

Models DF124056(X)(Y)-(Z)-(Z1), DF126038(X)(Y)-(Z)-(Z1), DB129015(X)(Y)-(Z)-(Z1) and DB129215(X)(Y)-(Z)-(Z1); where (X) may be S, B, P, Q; (Y) may be U, H, M, L, E; (Z) may be a through Z, 0 through 9 or blank; (Z1) may be A, B, C or D.



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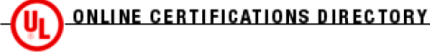


# DYNATRON CORPORATION

## TOP MOTOR TECHNOLOGY (HUIZHOU) CO, LTD

15-10-29

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### Fans, Electric Certified for Canada - Component

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**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), DF129225(A)E(C), DF129225(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.

Series 7515: Models DB127515(X)U-ZZZZ-(A), DB127515(X)H-ZZZZ-(A), DB127515(X)M-ZZZZ-(A), DB127515(X)L-ZZZZ-(A).

Series 9225: Models DF129225(X)U-ZZZZ-(A), DF129225(X)H-ZZZZ-(A), DF129225(X)M-ZZZZ-(A), DF129225(X)L-ZZZZ-(A).

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# DYNATRON CORPORATION

## TOP MOTOR TECHNOLOGY (HUIZHOU) CO,LTD

15-10-29

GPWW8.E157868 - Fans, Electric Certified for Canada - Component

Models DB128015(X)(Y)-(Z)-B and DF126028(X)(W)-(Z)-A series, where (X) may be S, B, P or Q; (Y) may be U, H, M or L; (W) may be U, H, M, L or E; (Z) stands for five variables, each may be A through Z, 0 through 9 or blank.


Model DF124028(X)(Y)-(Z)-D, where (X) may be S, B, P or Q; (Y) may be U, H, M, L, 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 "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.

Models DF124056(X)(Y)-(Z)-(Z1), DF126038(X)(Y)-(Z)-(Z1), DB129015(X)(Y)-(Z)-(Z1) and DB129215(X)(Y)-(Z)-(Z1); where (X) may be S, B, P, Q; (Y) may be U, H, M, L, E; (Z) may be a through Z, 0 through 9 or blank; (Z1) may be A, B, C or D.



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



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# DYNATRON CORPORATION

## TOP MOTOR TECHNOLOGY (HUIZHOU) CO.,LTD

### 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: I<sub>max</sub>=5mA(short circuit current)

Absolute maximum voltage level: V<sub>max</sub>=5.25V(open circuit voltage)

##### Fan Speed Control

###### 1.1 Maximum 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.



# DYNATRON CORPORATION

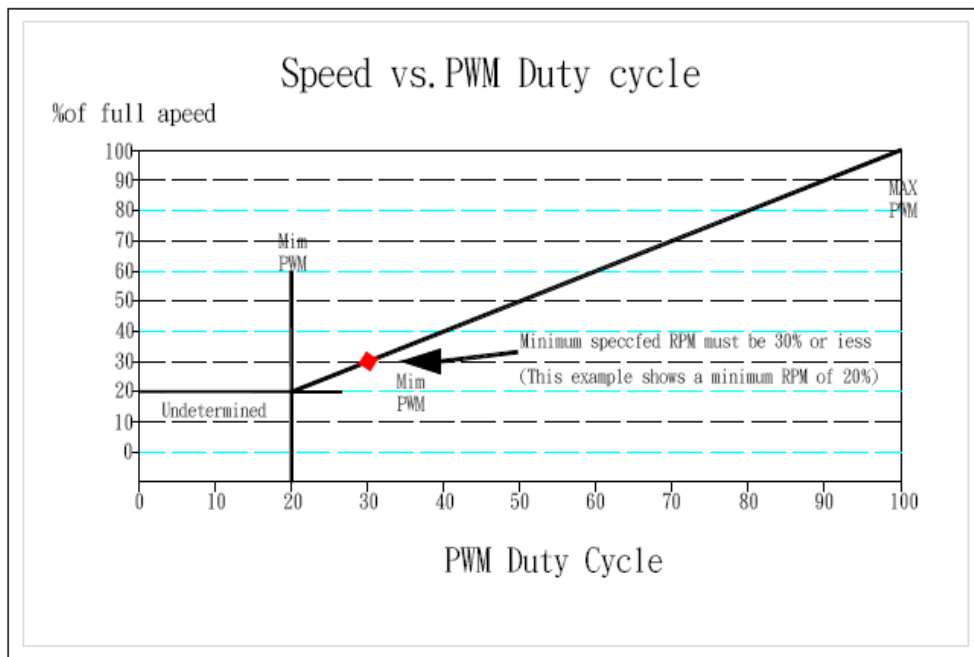
## TOP MOTOR TECHNOLOGY (HUIZHOU) CO, LTD

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.



# Certificate of Environment Protection

## 環保證明書

Document Number: RH-R24-R0

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<b>Issue Date:</b> 發行日期:	04/08/2013
<b>Product Model Number:</b> 產品號碼:	R24

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**Dynatron Corporation / Dynaeon Industrial Co., Ltd.**

Title (職務): \_\_\_\_\_ ASSISTANT-MANAGER / 副理 \_\_\_\_\_

Signature (簽字):   \_\_\_\_\_

Date: 04 / 08 / 2013