

Specification for Approval

Customer:		ОЕМ	
Model Number:		Z60	
Part Number:			
Issued Date:		Friday, March 3, 2023	
Version:		Α	
	Custom	er Approval	
Approval:		Check:	
	I		
Corporate Headquarters Dynatron Corporation 33200 Western Avenue Union City, CA 94587 U.S.A. Tel: 510-498-8888 Fax: 510-498-8488	Taipei Office (Taiwan, R.O.C.) Dynaeon Industrial Co., Ltd. 8F, No. 35, Lane:221 Gang Cian. Road, Taipei, Taiwan, R.O.C. Tel: 886-2-27995799 (Rep.) Fax: 886-2-2799-9577		Manufactory TOP MOTOR TECHNOL OGY (HUI ZHOU)CO.,LTD. Baishi Village,QiuchangTown, Huiyang Dist,HuizhouCity,Guangdong Province,P.R.China Tel: 86-752-822-8000 (Rep.) Fax: 86-752-822-8999
Approval:	Check:		Initiator:
Glen Kao	1		Tomy Chuang



- · Recommend for Intel® CPU as following
- Intel® Alder Lake Processor, Socket LGA1700

Overall Specification

Dimension	ø93.0 x 31.3 mm	
Weight	185g ± 5g	
Material	Aluminum 6063-T5 Extruded Radial Fin Heat Sink	
Fan	8015 Top-Down Blowing Fan	
Mounting Method	Screw Fastener Captive Mounting	
Thermal Grease	Shin-Etsu 7762 Thermal Compound Pre-Printed	
TDP	Up to 65 Watts CPU Power Heat Dissipation	

Cooling Fan Specification

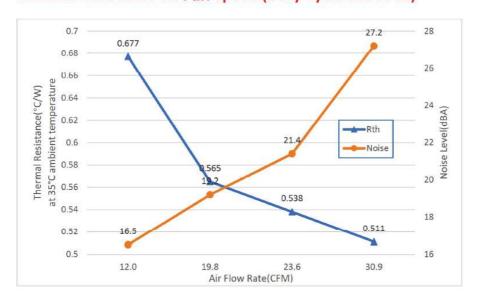
Dimension	80mm x 80m x 15 mm
Bearing	Dual-Ball Dual-Ball
Rated Voltage	12V
Rated Speed	At Duty Cycle 0~20%: 800 RPM At Duty Cycle 50%: 1500 RPM At Duty Cycle 100%: 2500 RPM
Input Power	At Duty Cycle 0~20%: 0.36 W At Duty Cycle 50%: 0.6 W At Duty Cycle 100%: 2.4 W
Maximum Airflow	At Duty Cycle 0~20%: 9.24 CFM At Duty Cycle 50%: 18.48 CFM At Duty Cycle 100%: 30.80 CFM
Rated Static Pressure	At Duty Cycle 0~20%: 0.23 mm-H2O At Duty Cycle 50%: 0.93 mm-H2O At Duty Cycle 100%: 2.60 mm-H2O
Acoustical Noise	At Duty Cycle 0~20%: 16.0 dBA At Duty Cycle 50%: 22.0 dBA At Duty Cycle 100%: 27.3 dBA
Lead Wire Pin Out	Pin#1- Black(-) Pin#2- Yellow(+)
	Pin#3- Green(Tachometer/ Signal Output) Pin#4- Blue (PWM)

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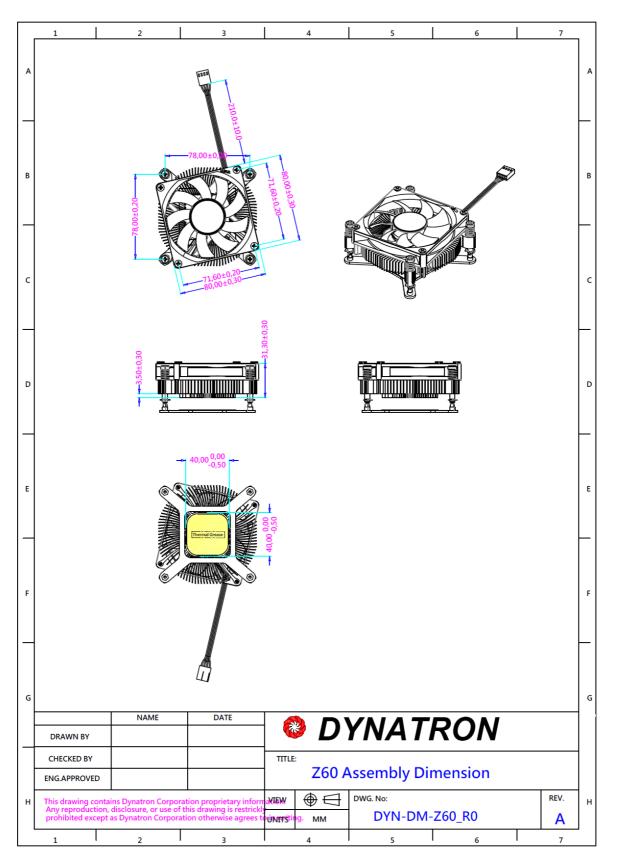


Thermal Resistance vs. Fan Speed (Duty Cycle and RPM)



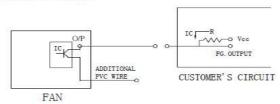


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FREQUENCY GENERATOR O/P:

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



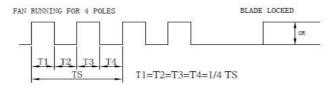
CUSTOMER'S CIRCUIT

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

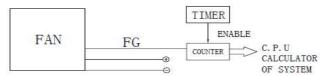
• OUTPUT LEVEL:

High = Vcc 10%

 $Low = 0 \sim 0.5V$

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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Electrical Specifications for PWM production

Voltage

Fan operating voltage shall be whthin the range 12V+/-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

cnnector: 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 S peed Requirements

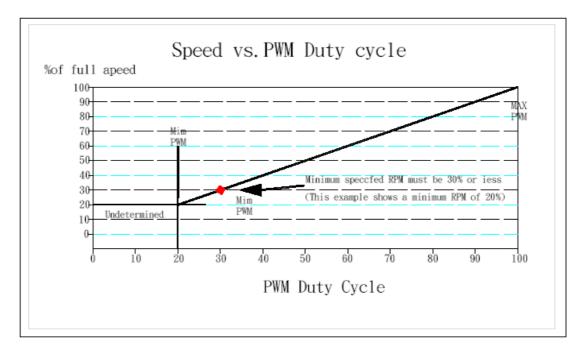
The vendor shall specify the minimum RPM and the corresponding PWM duty cycle. This specified minimum RPM shall be 30% of maximum RPM or less. The fan shall be able to start and run at this RPM. To allow a lower specified minimum RPM, it is acceptable to provide a higher PWM duty cycle to the fan motor 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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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



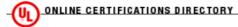
1.4 Operation Below Minimum RPM

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

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



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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, B), 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), DF128015(A)(B)(C), DF129225(A)(B)(C), DF128025(A)(B)(C), DF128015(A)(B)(C), DF128015(A)(B)(C),

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.

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 th1rough 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.

 $\label{eq:models DF054010(X)(Y1)(Z1)(Z2)-C, DF124010(X)(Y2)(Z1)(Z2)-C, DF244010(X)(Y2)(Z1)(Z2)-C, DF124020BU(Z1)(Z2)-C, DF124020(X)(Y1)(Z1)(Z2)-C, DF124028BU(Z1)(Z2)-C, DF124028(X)(Y1)(Z1)(Z2)-C, DF126025BU(Z1)(Z2)-C, DF126025BU(Z1)(Z2)-C,$ 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.

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).

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GPWV2.E157868 - Fans, Electric - Component

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

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

 $Models\ DF124056(X)(Y)-(Z)-(Z1),\ DF126038(X)(Y)-(Z)-(Z1),\ DB129015(X)(Y)-(Z)-(Z1)\ and\ DB129215(X)(Y)-(Z)-(Z1);$ 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,

TOP MOTOR and model designation. Marking: Company name or trademark TOP

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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.

 $\begin{aligned} &\text{Models DF121225(A)(B)(C), DF121225(A)E(C), DF241225(A)(B)(C), DF128015(A)U(C), DF128015(A)(B)(C), DF128025(A)U(C), DF128025(A)(B)(C), DF128015(A)(B)(C), DF128$

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.

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

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 th1rough 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.

 $\label{eq:models DF054010(X)(Y1)(Z1)(Z2)-C, DF124010(X)(Y2)(Z1)(Z2)-C, DF244010(X)(Y2)(Z1)(Z2)-C, DF124020BU(Z1)(Z2)-C, DF124020(X)(Y1)(Z1)(Z2)-C, DF124028BU(Z1)(Z2)-C, DF124028(X)(Y1)(Z1)(Z2)-C, DF126025BU(Z1)(Z2)-C, DF126025(X)(Y1)(Z1)(Z2)-C, DF126025(X)(Y1)(Z1)(Z2)-C, DF127015BU(Z1)(Z2)-A, DF127015(X)(Y1)(Z1)(Z2)-A, DF128025BU(Z1)(Z2)-B, DF128025(X)(Y1)(Z1)(Z2)-B, DF129225BU(Z1)(Z2)-A, DF129225(X)(Y1)(Z1)(Z2)-A, DF121225BU(Z1)(Z2)-D, DF121225(X)(Y1)(Z1)(Z2)-D, DF121225(X)(Y1)(Z1)(Z2)-D, DF121225(X)(Y1)(Z1)(Z2)-A, where (X) may be S, B, P or Q, where (Y1) may be H, M, L or E, where (Y2) may be M or L, where (Z1) may be blank or 3, where (Z2) may be is alphanumeric combination of four digits and/or alphabets, may be A through Z, 0 through 9 or blank. } \\$

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).

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

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

 $Models\ DF124056(X)(Y)-(Z)-(Z1),\ DF126038(X)(Y)-(Z)-(Z1),\ DB129015(X)(Y)-(Z)-(Z1)\ and\ DB129215(X)(Y)-(Z)-(Z1);$ 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,

Marking: Company name or trademark 100 MOTON , model designation and Recognized Component Mark for Canada,

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