DYNATRON CORPORATION

TOP MOTOR TECHNOLOGY(HUIZHOU)CO,LTD

TOP MOTOR

Specification for Approval

Customer:	研揚科技股份有限公司
Model Number:	K785 (2u Cooler)
Part Number:	
Issued Date:	Monday September 06, 2010

Customer Approval	
Approval:	Check:
Corporate Headquarters ***Dynatron Corporation*** 41458 Christy Street, Fremont, California 94538, U.S.A. Tel: 510-498-8888 Fax: 510-498-8488	Manufactory ***TOP MOTOR TECHNOLOGY(HUI ZHOU)CO,LTD*** Baishi Village,QiuchangTown, Huiyang Dist,HuizhouCity,Guangdong Province,P.R.China Tel: 86-752-353-5591 (Rep.) Fax: 86-752-353-5592
Los Angeles Office (U.S.A.) 337 Paseo Sonrisa, Walnut, California 91789 U.S.A. Tel: 909-598-2222 Fax: 909-598-8158	*Taipei Office (Taiwan, R.O.C.)* 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	-	Hui mei

TOP MOTOR

DYNATRON CORPORATION

TOP MOTOR TECHNOLOGY(HUIZHOU)CO,LTD

CONTENTS

		Page
1.	SCOPE	3
2.	ELECTRICAL CHARACTERISTICS	3
3.	MECHANICAL CHARACTERISTICS	4
4.	ENVIRONMENTAL	4
5.	PROTECTION	5
6.	ATTACHMENTS	6
	6.1. Assembly Parts	6
	6.2.Product Dimension	7
	6.3.Frequency Generator Output	8
	6.4. Electrical Specifications for pwm production	9-10
	6.5.TUV Certificate	11
	6.6.UL Certificate	12-15
7.	SGS Report	16
	7.1. PBT SGS Report	16-21
	7.2. PCB SGS Report	22-28
	7.3. Wire SGS Report	29-115
	7.4. CU Base SGS Report	116-121
	7.5. AL SGS Report	122-125

1. SCOPE
   This specification defines the electrical and mechanical characteristics of the ☐ AC / ■ DC Brush less(☐Sleeve Bearing/☐1-Ball Bearing/■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	10.2 V ~ 13.8 V		
3.	PWM Frequency 25KHz	Duty Cycle D＝20%	Duty Cycle D＝50%	Duty Cycle D＝100%
4.	Start Voltage	7V		
5.	Air Flow – At rated voltage zero static pressure (minimal value)	0.286m³ /z min (10.124CFM)	0.672m³ / min (25.3 CFM)	1.29m³ / min (45.56 CFM)
6.	Static Pressure – At rated voltage At zero air flow	0.185mm-H_2O (0.007inch-H_2O)	1.156mm-H_2O (0.046 inch-H_2O)	3.746mm-H2O (0.147inch-H2O)
7.	Input Current (Max.)	0.05A	0.11A	0.45A
8.	Speed (Max.)	1000RPM ±15%	2500RPM ±10%	4500RPM ±10%
9.	Acoustical Noise	13.14dBA	33.04dBA	45.8dBA
10.	Input Power	0.6W	1.32W	5.4W
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)	50,000 hours		
14.	Rotation	Clockwise Air Discharged		
15	Autorestart Time	3-5sec		
16	Lead Wires	UL 1007, awg 28or Equivalent “-“: Black; “+”: Yellow;”s”: Green. ”PWM”: Blue.		

3. MECHANICAL CHARACTERISTICS

Items		Description
1.	Dimension	Display as Drawing
2.	Frame	PPS UL94V-0 (Black GP)
3.	Impeller	PBT UL94V-0 (Black GP)
4.	Bearing System	Two ball Bearing
5.	Weight	500±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. Lineear 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	45.8dBA – Curve (Max44.1dBA) Measuring Condition – Under rated voltage in semi-anechoic chamber equipment sound level meter. (Figure A.)

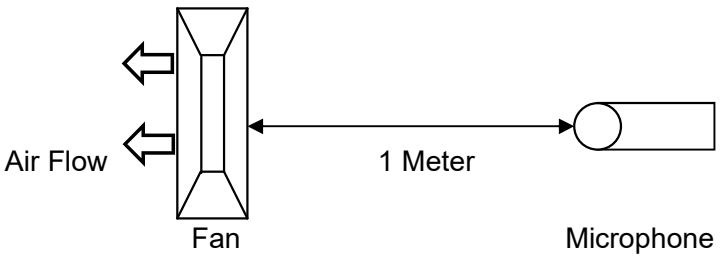


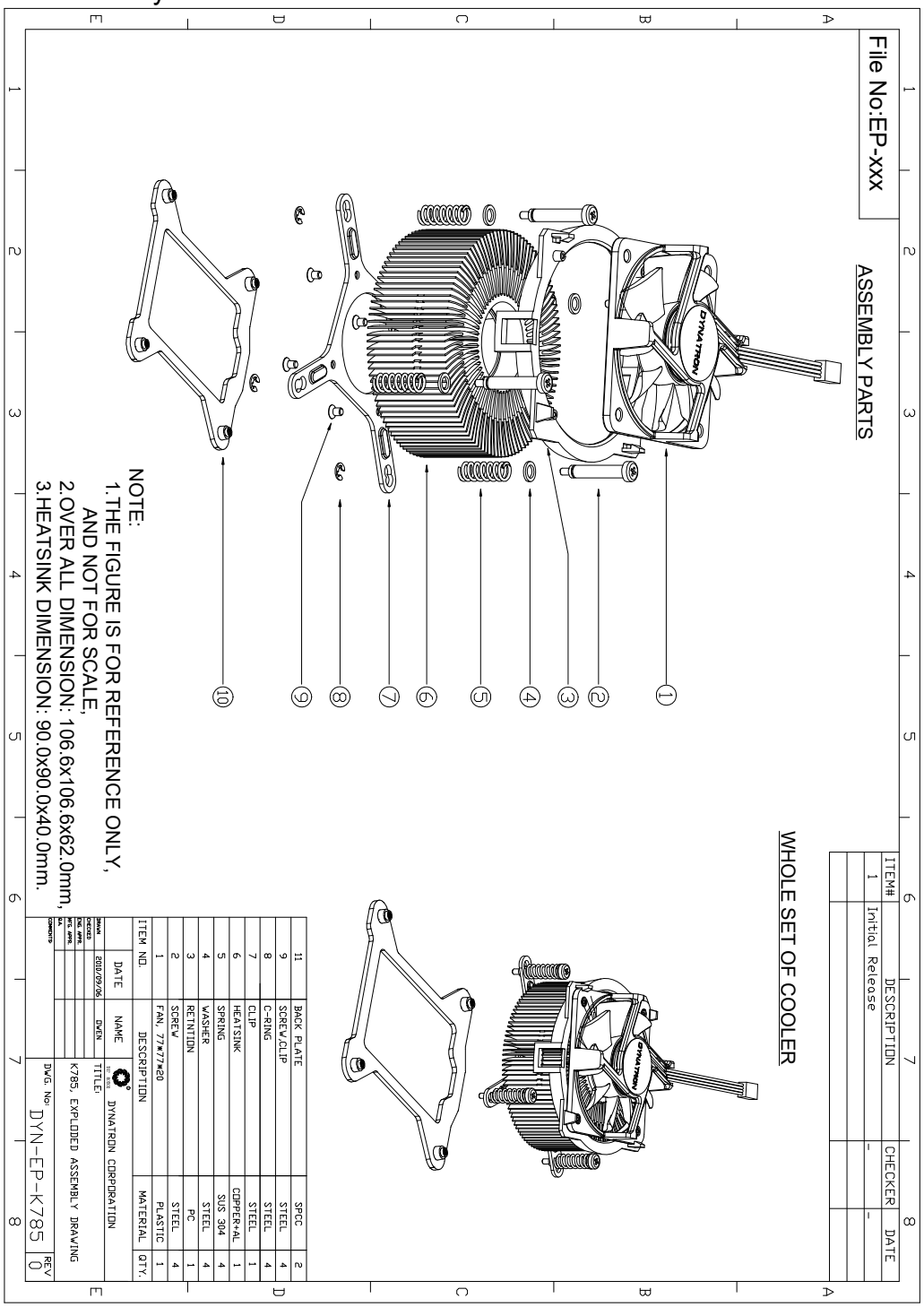
Figure A – Noise Level is measure at rated voltage in anechoic chamber in free air as above.

5. PROTECTION

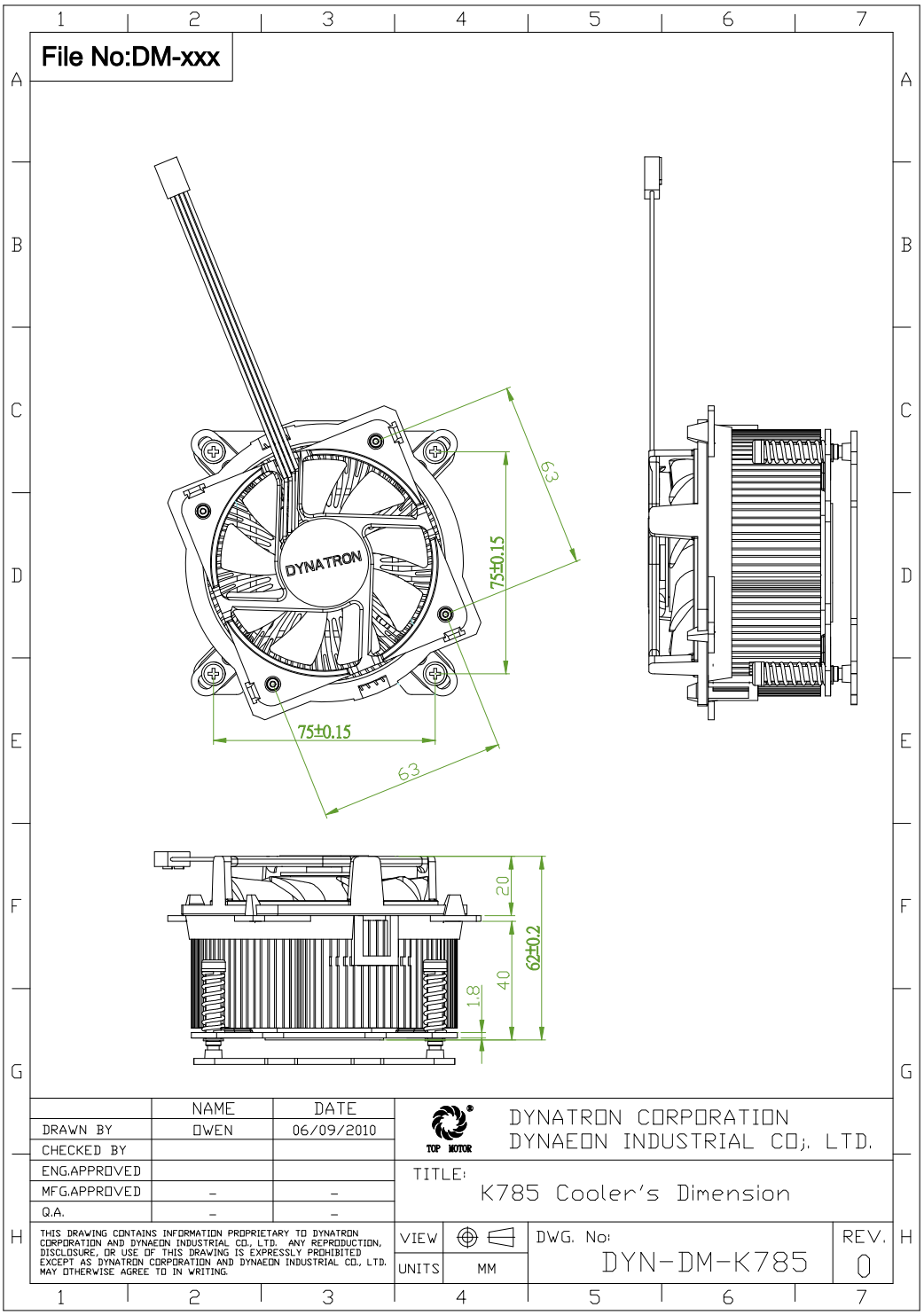
Items		Description
1.	Polarity Protection	For polarity error connection to p ower, the circuit withstands rever sed connection between positive and negative leads.
2.	Locked Rotor Protection	Motor winding protects the motor from damage in 72 hours of locke d rotor condition at rated voltage.

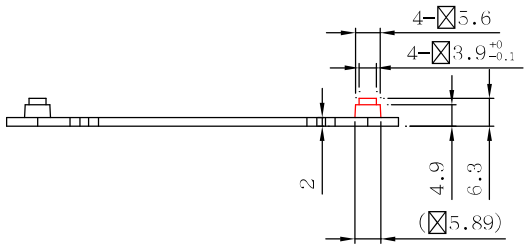
6. ATTACHMENTS

6.1. Assembly Parts:

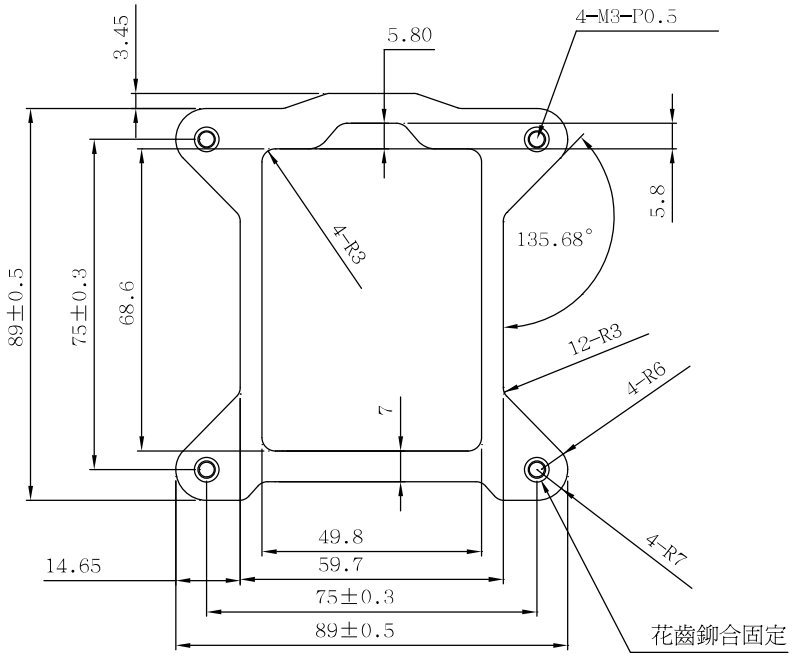


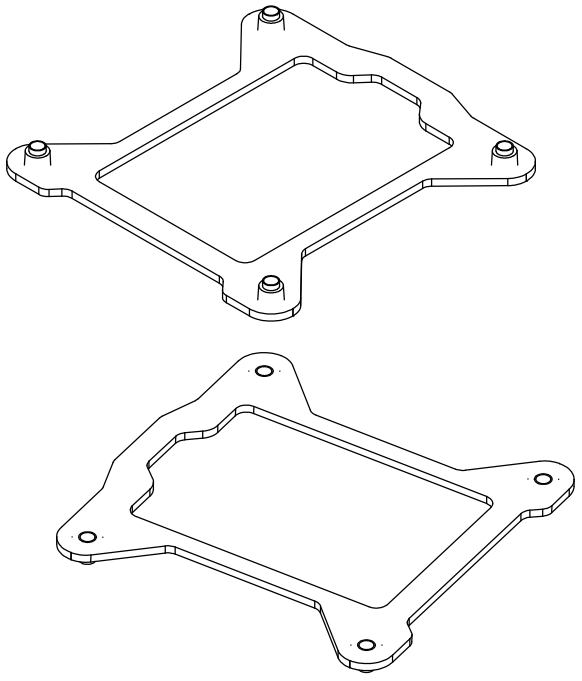
6.2. Product Dimension:

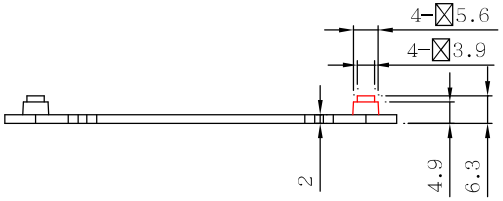




GP







註 ：

1. 材料使用都必須符合RoHS規範。
2. 螺柱鉚合破壞扭力8kgf以上
3. 表面處理不可有有感刮傷
4. 成品平整度±0.3
5. 檢驗標準依據圖面公差表檢驗

TOLERENCE TABLE (UNLESS OTHERWISE SPECIFIED)	
RANGE	TOL±
UNDER 6	0.18
6~10	0.22
10~18	0.27
18~30	0.33
30~50	0.39
50~80	0.46
80~120	0.54
120~250	0.63
250 OVER	0.8
ANG TOL±	1°

REV	DESCRIPTION	DATE
	REVISION HISTORY	

MATERIAL: SPCC	FINISH: 電著黑	REV: —	DRN	BETH	08/19 2009	P/N: JAT180-B	
			CHK			TITLE: 1156 Backplate	SCALE: —
			APP				UNIT: M/M

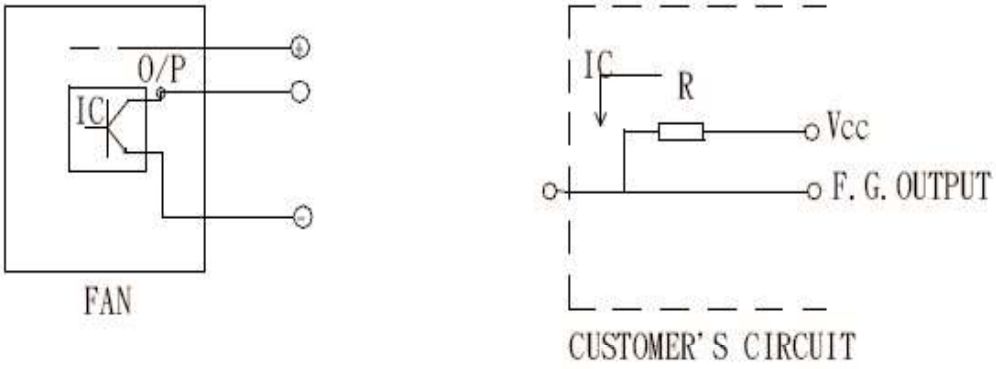
6.3. Frequency Generator Output:

FREQUENCY GENERATOR OUTPUT(Tack Out)

3rd Wird Square Wave Signal is Amplified by a transistor (open collector type)

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

Electrical schematic:



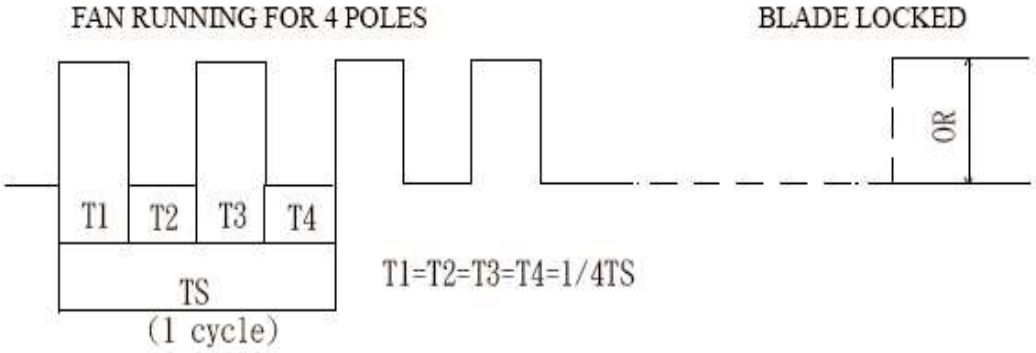
CUSTOMER'S CIRCUTT

Vcc=From+5 To+28 VDC(Generally using+12or+24 VDC)

Ic=2mA max.

R=V/I(OUTPUT "R" value calculation)

Frequency generator waveform:



TS=60/N(sec)

N=R.P.M. (Rotation speed will be different by various model L/M/H)

6.4. Electrical Specifications for pwm production:

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 condifion)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.

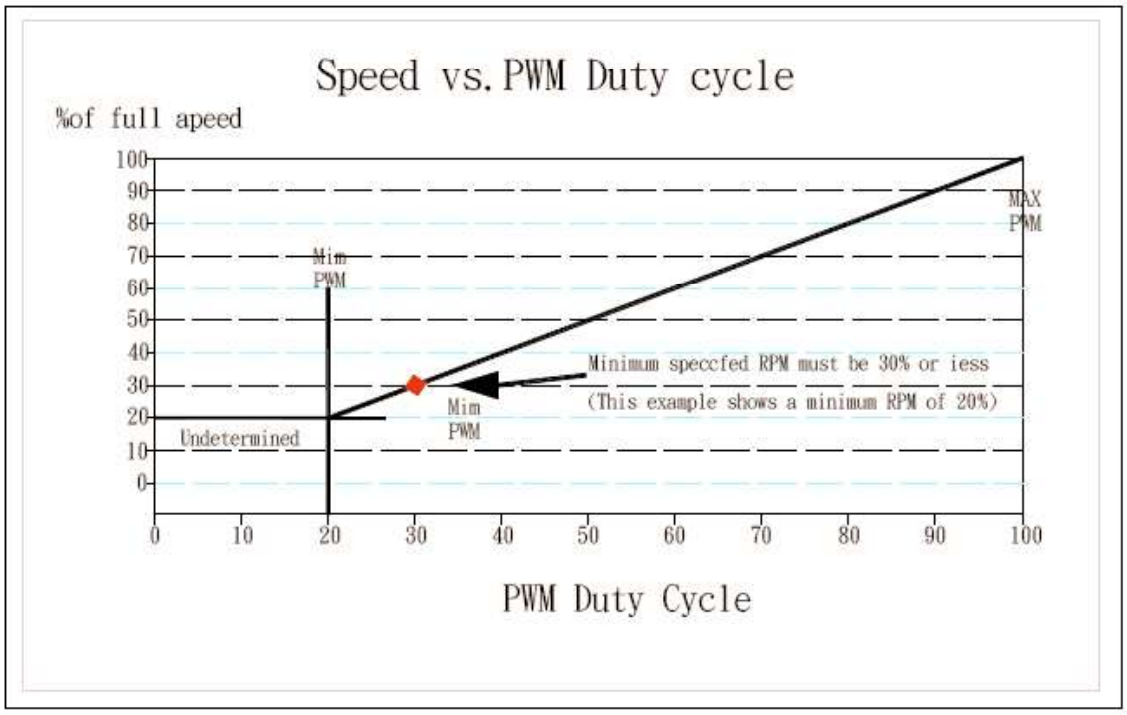
1.2 Minimum Fan S peed Requirements

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.

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 ±10%.If no control signal is present the fan shall operate at maximum RPM.

Figure 1 Fan speed Response to PWM Control input Signal

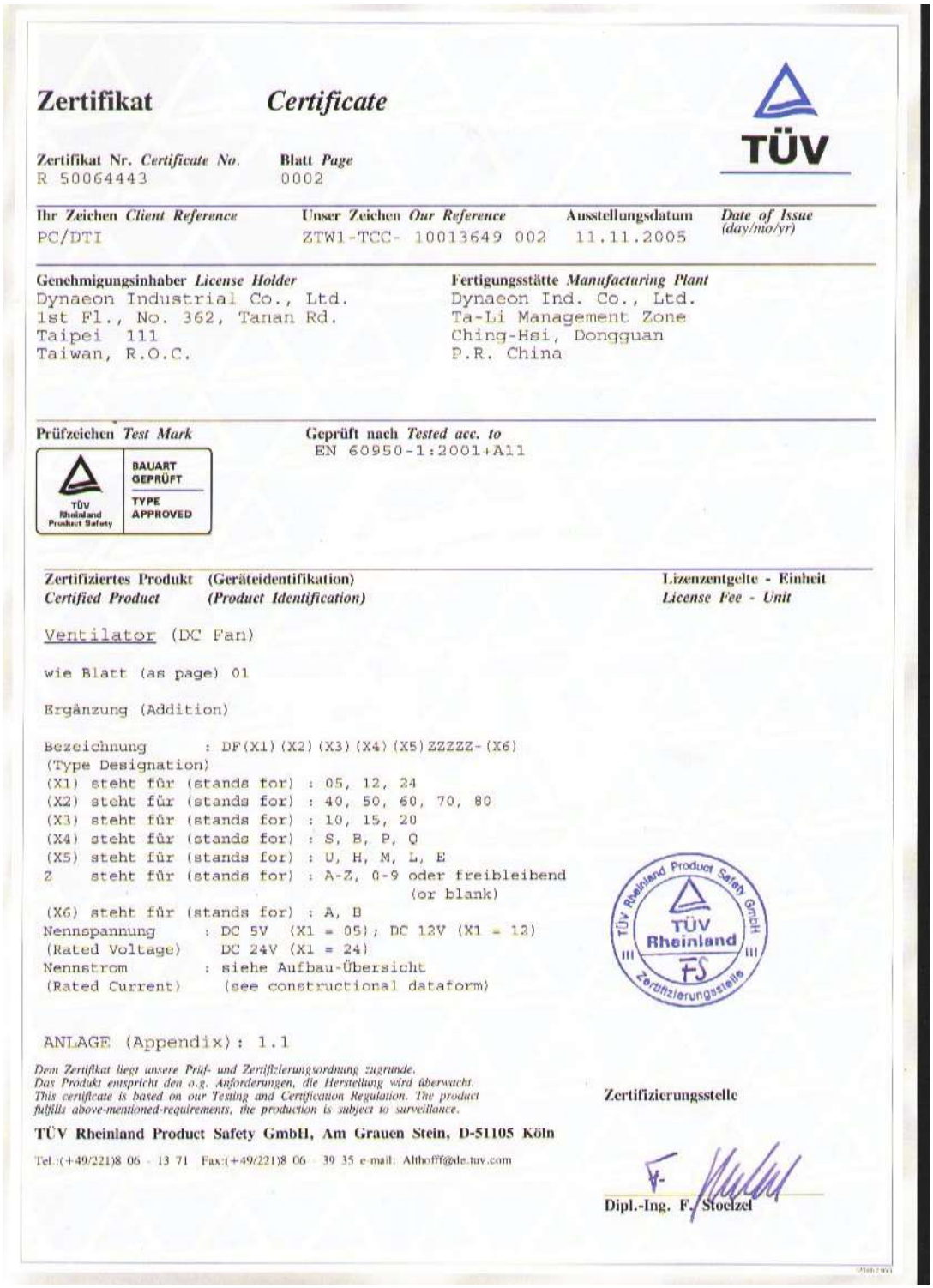


1.4 Operation Below Minimum RPM

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.

6.5.TUV Certificate:



Zertifikat *Certificate*

TÜV

Zertifikat Nr. *Certificate No.* R 50064443 — **Blatt** *Page* 0002

Ihr Zeichen *Client Reference*	Unser Zeichen *Our Reference*	Ausstellungsdatum	*Date of Issue (day/mo/yr)*
PC/DTI	ZTW1-TCC- 10013649 002	11.11.2005	

Genehmigungsinhaber *License Holder*
Dynaeon Industrial Co., Ltd.
1st Fl., No. 362, Tanan Rd.
Taipei 111
Taiwan, R.O.C.

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

Prüfzeichen *Test Mark*
TÜV Rheinland Product Safety — 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 (Addition)

Bezeichnung : DF(X1)(X2)(X3)(X4)(X5)ZZZZZ-(X6)
(Type Designation)
(X1) steht für (stands for) : 05, 12, 24
(X2) steht für (stands for) : 40, 50, 60, 70, 80
(X3) steht für (stands for) : 10, 15, 20
(X4) steht für (stands for) : S, B, P, Q
(X5) steht für (stands for) : U, H, M, L, E
Z steht für (stands for) : A-Z, 0-9 oder freibleibend (or blank)
(X6) steht für (stands for) : A, B
Nennspannung : DC 5V (X1 = 05); DC 12V (X1 = 12)
(Rated Voltage) DC 24V (X1 = 24)
Nennstrom : siehe Aufbau-Übersicht
(Rated Current) (see constructional dataform)

TÜV Rheinland Product Safety GmbH — TÜV Rheinland — FS — Zertifizierungsstelle

ANLAGE (Appendix): 1.1

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 Fax:(+49/221)8 06 - 39 35 e-mail: Althofff@de.tuv.com

Dipl.-Ing. F. Stoelzel