# SPECIFICATION FOR APPROVAL

TO : 上海榮優

REF. No.

| APPROVED DATE | CHECKED DATE | PREPARED DATE |
|---|---|---|
| 研發處 2013.02.08 簡文榮 | 研發處 2013.02.08 陳建志 / 研發處 2013.02.08 章瑞琪 | 研發處 2013.02.08 吳靜心 |

MODEL No. AD17248HB515BM0 P.S. (0CW)

DESCRIPTION: DC FAN (RoHS) REV. A

ID No.

THIS OFFER IS MADE ACCORDING TO YOUR CURRENT INQUIRY. UNLESS OTHERWISE REVISED, THIS SPECIFICATION WILL BE FINAL FOR ALL FUTURE PRODUCTION OF ORDERS FROM YOUR RESPECTED COMPANY

KINDLY STUDY IN DETAILS AND RETURN TO US THE DUPLICATE DULY SIGNED AS YOUR CONFIRMATION OF SAME.

協禧電機股份有限公司 研發處 2013.02.08 發行章

ADDA CORP. REGISTERED ISO 9001 ISO/TS 16949 CERTIFICATE NO.A8035

ADDA ADDA CORPORATION

D A T A - S H E E T

Engineering

Printed On: 13/2/08

BRUSHLESS AXIAL COOLING FANS

| | | |
|---|---|---|
| Customer | : 上海榮優 | Ref: (RoHS) |
| Adda Model No | : AD17248HB515BM0 P.S: (0CW) | |
| Samples attached | : Piece(s), | |
| Safety Approval | : UL.CUL,TUV,CE | TUV:EN 60950-1:2001+A11+A1+A12<br>UL:UL507<br>CE:EN 61000-6-1:2007<br>EN 61000-6-3:2007 |

Specifications

| ITEM | SPECIFICATION / CONDITION |
|---|---|
| DIMENSIONS | : 172x150x51 mm |
| BEARING TYPE | : BALL |
| RATED VOLTAGE | : 48 VDC |
| OPERATING VOLTAGE RANGE | : 45.6 VDC ─ 50.4 VDC |
| OPERATING DUTY CYCLE RANGE | : 30% ~ 100% |
| START─UP VOLTAGE | : 30% Max (AT RATED VOLTAGE) |
| REAL CURRENT | : 1.05 Amp |
| REAL POWER | : 50.40 Watt |
| RATED CURRENT | : 1.26 Amp + 10 %MAX (Duty cycle 100%) |
| RATED POWER | : 60.48 Watt (Duty cycle 100%) |
| RATED SPEED | : 4800 RPM ± 10 % (Duty cycle 100%) |
| | (IN FREE AIR AT RATED VOLTAGE) |
| AIR FLOW | : 362.000 CFM (min.: 325.800 CFM) |
| AIR FLOW | : 10.244 CMM (min.: 9.219 CMM) |
| | (IN FREE AIR AT RATED VOLTAGE) |
| STATIC AIR PRESSURE | : 1.330 Inch $H_2O$ (min.: 1.077 Inch $H_2O$) |
| STATIC AIR PRESSURE | : 33.782 mm $H_2O$ (min.: 27.363 mm $H_2O$) |
| | (IN FREE AIR AT RATED VOLTAGE) |
| NOISE LEVEL | : 65.7 dB (A) (max.: 69.7 dB(A)) |
| MOTOR PROTECTION | : BY IC |
| POLARITY PROTECTION | : YES |
| CONNECTION LEAD TYPE | : WIRE, AWG# 22 |
| LIFE EXPECTANCY | : 70000 Hours at 40℃ / 65% RH |
| NET WEIGHT | : 762 Gram. |
| PACKING | : 8 pcs. Per Export Carton. |

＊ If no PWM signal is present (no connection to the PWM drive signal), the fan should be run at rated speed RPM.

＊ The fan should be run,at Max of start -up duty cycle.

Unless otherwise stated, the relative humidity is 65%, and the temperature is 25℃ for the standard testing.

Should you have any doubt, please refer to the environmental conditions specified in the acknowledgement document.

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## SPECIFICATION

1 · 0 SCOPE

1.1 If the information or other related document is inconsistent with this acknowledgement document, please refer to the acknowledge document.

1.2 This documentation defines the mechanical & electrical characteristics of DC brushless fans.

1.3 The specification of this product is described in details in the acknowledgement document. No guarantee is given to our product under the use of over specifications.

1.4 For any change or amendment to the specifications, such change will be noticed in writing beforehand.

1.5 If the product is used on the MIS system, please specify the specification in the purchase order.

2 · 0 MATERIAL

2 · 1 Frame : Aluminum alloy

2 · 2 Fan Blade : UL94V-0 Glass Filled polyester (P.B.T)

2 · 3 Bearing Sys. : ( ) Sleeve, oil impregnated.
(V ) Two Ball Bearing
( ) One Ball one Sleeve
( ) Hypro Bearing
( ) FDB Bearing

2 · 4 RoHS : (V ) YES
HF : ( ) YES

3 · 0 DIMENSIONS & CONSTRUCTION

All dimensions, Direction of rotation and air flow were specified as per drawing attached.

4 · 0 CHARACTERISTICS & DEFINITION

4 · 1 All rated characteristics were specified as per data sheet enclosed.

4 · 2 Rated Current : Rated Current shall be measured after 3 minutes of continuous rotation at rated voltage.

4 · 3 Rated Speed : Rated Speed shall be measured after 3 minutes. of continuous rotation at rated voltage.

4 · 4 Start Voltage : The voltage which is able to start the fan to operate by suddenly switching 'ON '.

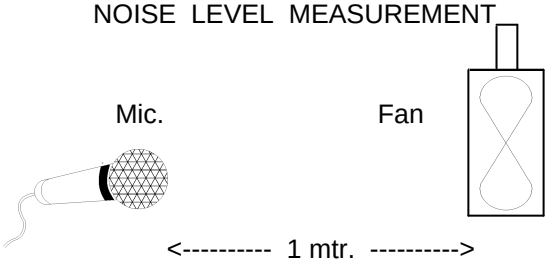
4 · 5 Input Power : Input Power shall be measured after 3 minutes of continuous rotation at rated voltage.

4 · 6 Locked Rotor Current : Locked current shall be measured within one minute of rotor locked, after 3 minutes of continuous rotation at rated voltage in clean air.

4 · 7 Air Flow & Static Pressure : The air flow data and static pressures should be determined in accordance with AMCA-210 standard in a doublechamber testing with intake – side measurement.

4 · 8 Noise Level : The measurement of noise level is carried out with reference to CNS8753 in an anechoic chambar with the microphone positioned 1 meter from the air intake. Testing fan shall be hung in clean air .

NOISE LEVEL MEASUREMENT




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5.0 MECHANICAL INSPECTION

5.1 Rotation Direction
Clockwise when look into impeller side.

5.2 Protection
All fans have integrated protection against locked rotor condition so that there will be no damage to winding or any electronic component.
Restarting is automatic as soon as any constraint to rotation has been released.
As fan placed at dead angle position, and the switch was changed from off to on. Restarting was automatic normal as soon as and proved that this fan is good fan.

5.3 Locked Rotor Protection
No damage shall be found after 72 hours continuously at condition of rotation locked.
Restarting is automatic as soon as constraint to running has been released.

5.4 Avoid the damage, check the correct voltage and proper polarity before connecting with power.

5.5 Free Drop Shock
In minimum package condition, the fan should withstand drops on any three faces from a height of 30cm onto a wood board of 10mm thick.

5.6 Please do not stick a grease and/or an oil to the fan housing or blade which may have a harmful influence by a chemical reaction at high humidity.

5.7 If the fan is reinstalled, please pay special attention to the noise due to the vibration (or resonance).

5.8 During the testing of the fan, please make sure the finger guard is used for safety.

6.0 ELECTRICAL INSPECTION

6.1 Insulation Resistance
Not less than 10M ohm between housing and positive end of lead wire (red) at 500V DC.

6.2 Dielectric Strength
No damage should be found at 500 VAC for 60 seconds, measured with 1mA trip current between housing and positive end of lead wire.

6.3 Life Expectancy
The continous duty life at given temperature after which, 90% of testing units shall still be running.

6.4 While the fan is running, do not intentionally lock the fan for a long time since the overheating of the motor produced by the long-time locking will damage the fan.

7.0 ENVIRONMENTAL

7.1 Improper use such as disassembling the fan, being covered with dust, or dipping the fan in water that results in defects is not covered in the warranty. Do not use the fan in the environment with corrosive air or liquid.

7.2 Operating Temperature / Humidity
-10℃ to +70 ℃ at humidity 65%+/-20% RH.

7.3 Storage Temperature
All function shall be normal after 500 hours storage at -40℃ to +70 ℃ with a 24 hour recovery period at room temperature.

7.4 Humidity
After 96 hours, 95% RH, 40+/-2℃ per MIL-STD-202F, method 103B humidity test, the measured data on insulation resistance and dielectric strength shall meet the specificaiton.

7.5 Do not place or store the fan in the environment with high/low temperature/humidity. Do not store the fan for over 6 months; even if the fan is stored in room temperature for over 6 months, the fan may have the electric current leakage.



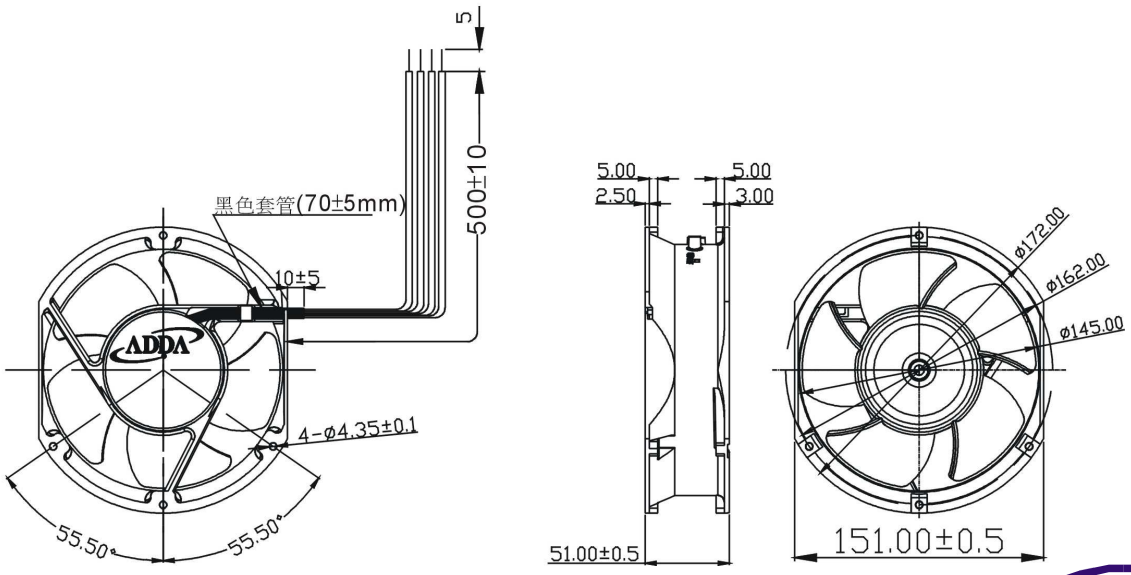
8.0 REMARKS

8.1 Material and construction are subject to change without advance notice. The changes should be within specification.

8.2 All fans shall meet the quality inspection under sampling plan MIL-STD-105E as follow:

| | |
|---|---|
| Critical | 0.25% |
| Major | 1.00% |
| Minor | 2.50% |

9.0 OUTLINE STYLING & DIMENSIONS




LEAD WIRES : UL 1061, AWG22 , L = 500±10 mm
Red = positive ; Black = negative.
White = FG ; Blue = PWM

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10.0 Notes:

10.1 Please do not touch and push Fan Blade with fingers or others, fan blade and ball bearings may be damaged and it causes noise defect.

10.2 Do not carry the fan by its lead wires.

10.3 If the fan does not have the polarity protection function, the connection of the colored wires should be red + red, and black + black, or else the fan will be damaged in no time.

10.4 For the models without reverse connection of polarity protection, please do not connect the lead wire in reverse

10.5 Please don't install this fan in series with 2x voltage inputs. For example, if a single fan rated at 12V, then don't install two of them in series with 24V input.

10.6.Every specific fan is designed for its certain application (project). Therefore, if you want to use this fan in other application (project), please inform ADDA first so that we can confirm whether there is any issue which might be incurred from the reason of this different application (project) or not.
application (project) or not.

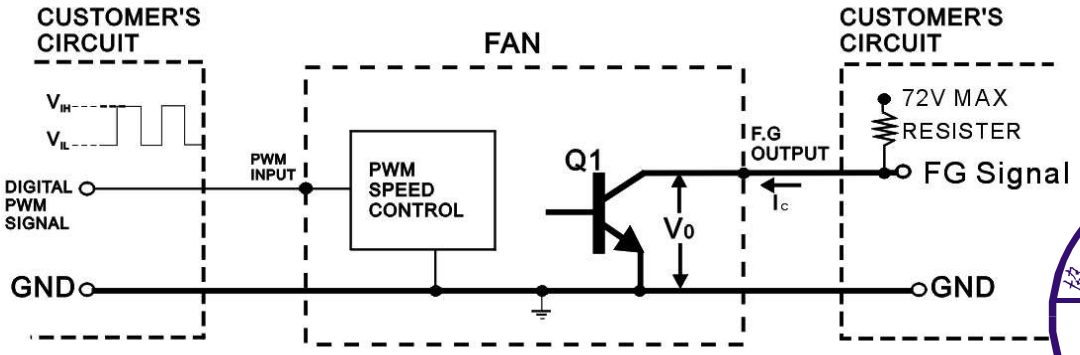
10.7 The"Life Expectancy" of this fan has not been evaluated for use in combination with any end application. Therefore,the Life Expectancy in the Test Reports(L10 and MTTF Report) that relate to this fan is for reference only and shall not construe any kind of warranty of ADDA to the life of any specific fan,either expressed or implied.

10.8 The period of product warranty,unless otherwise agreed by ADDA in written,shall be 12 months staring from the date of production.

PROVISION OF DIGITAL PWM SPEED CONTROL & LOCKED SIGNAL(F.G)

• OUTPUT OF LOCKED SIGNAL ----------OPEN COLLECTOR TYPE

(External signal function design is decided by customer)




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*TRANSISTOR Q1 AT "ON" POSITION

COLLECTOR CURRENT---------- $I_C$ =10mA MAX

SATURATION VOLTAGE---------- $V_{OL}$=1 V MAX

*TRANSISTOR Q1 AT "OFF" POSITION

RELEASE VOLTAGE---------- $V_{OH}$=72 V MAX

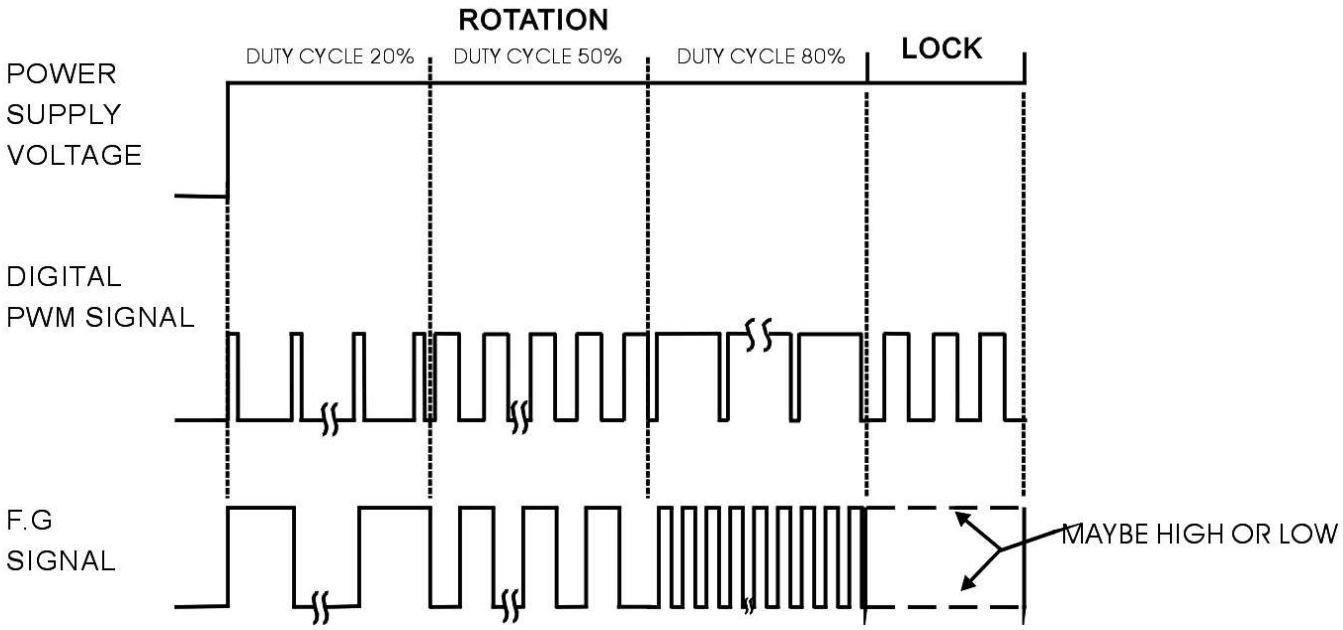
*DIGITAL PWM SPEED CONTROL POSITION

PWM INPUT VOLTAGE HIGH(MAX)----------$V_{IH}$=5.5 V MAX

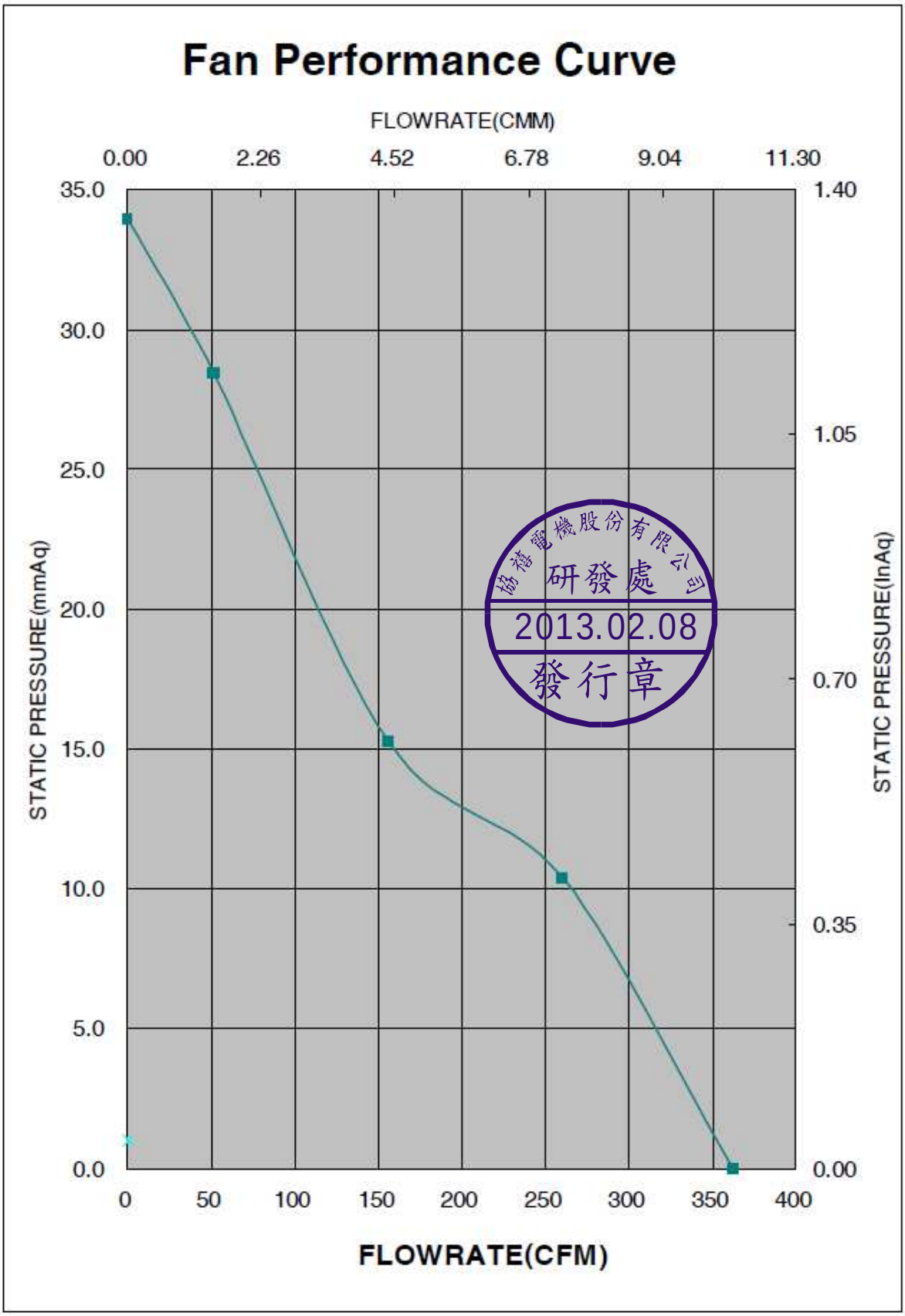
PWM INPUT VOLTAGE HIGH(MIN)----------$V_{IH}$=4 V MIN

PWM INPUT VOLTAGE LOW----------$V_{IL}$ = 0.5 V MAX

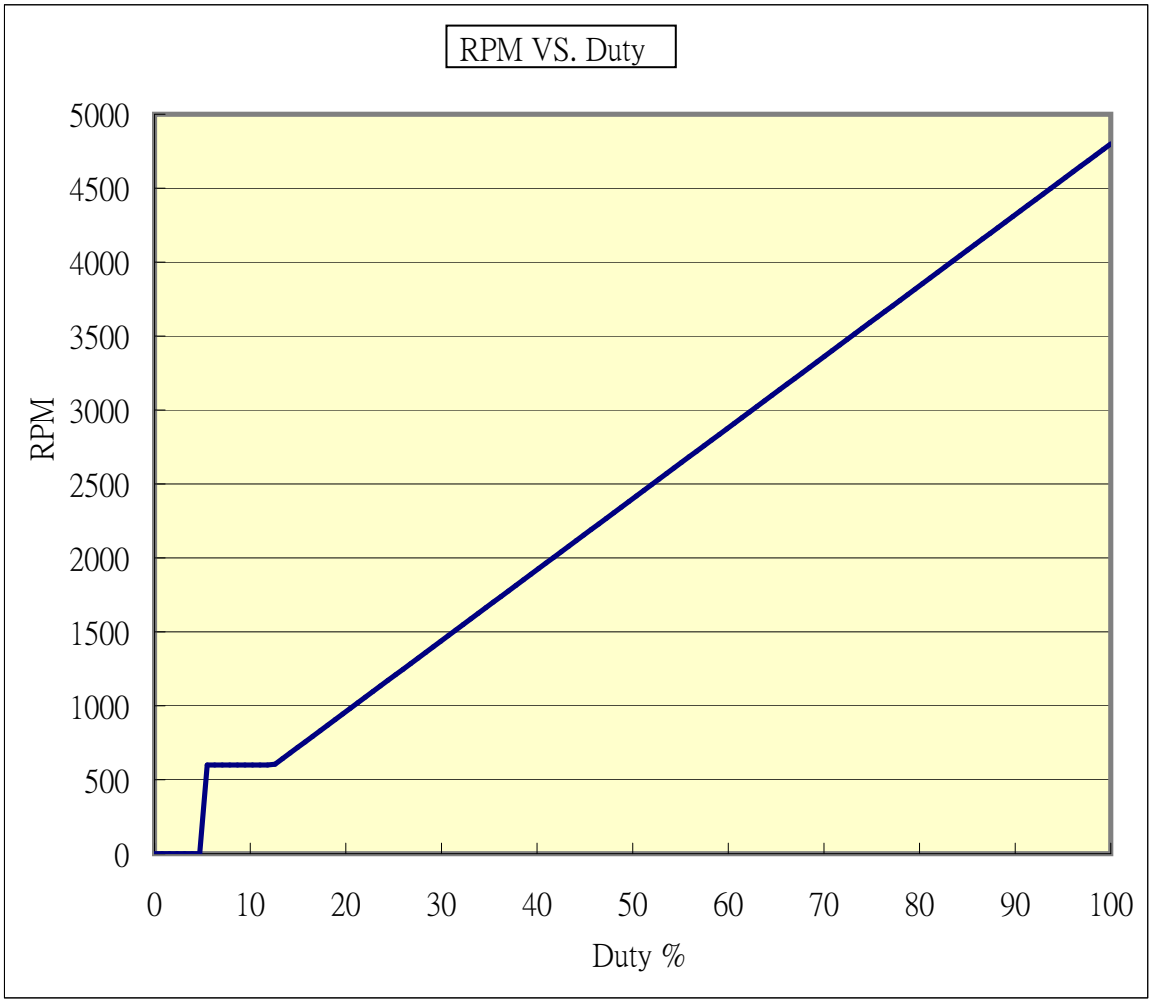
*PWM INPUT FREQUENCY----------FPWM:18KHZ~30KHZ



MODEL: AD17248HB515BM0(0CW)



FAN SPEED VS. PWM CONTROL SIGNAL
(AT RATED VOLTAGE & PWM 5V & FREQUENCY=25KHZ & TEMP=25℃ )




| Duty cycle % | SPEED R.P.M |
|---|---|
| 100 | 4800 +/-10% |
| 50 | 2400 +/-10% |
| 0 | 0 |

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2013.02.08
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# Zertifikat *Certificate*

TÜVRheinland®

**Zertifikat Nr.** *Certificate No.*
R 50156693

**Blatt** *Page*
0031

| **Ihr Zeichen** *Client Reference* | **Unser Zeichen** *Our Reference* | **Ausstellungsdatum** | *Date of Issue (day/mo/yr)* |
|---|---|---|---|
| 8293900916/RL160810 | ZTW1-SSY- 11016931 023 | 26.08.2010 | |

**Genehmigungsinhaber** *License Holder*
Adda Corporation
6, East Section, Industry 6 Road
Pingtung City 900
Taiwan, R.O.C.

**Fertigungsstätte** *Manufacturing Plant*
Adda Corporation
6, East Section, Industry 6 Road
Pingtung City 900
Taiwan, R.O.C.

**Prüfzeichen** *Test Mark*

www.tuv.com TÜVRheinland ID:2000000000
- 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 (Type Designation) | : AD17248Z1B515Z2M0 | 1 |
| | AD0712Z1Z3-A7BGL | 1 |
| | AD1212HX-PF3 | 1 |
| | AD0824VB-F7BDS | 1 |
| Z1 steht für (stands for) | : D, L, M, H oder (or) U | 1 |
| Z2 steht für (stands for) | : 1, 2, 3, 9 oder (or) B | 1 |
| Z3 steht für (stands for) | : B, S oder (or) X | 1 |
| Nennspannung (Rated Voltage) | : siehe Anlage (see appendix) | |
| Nennstrom (Rated Current) | : siehe Anlage (see appendix) | |

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TÜV Rheinland LGA Products GmbH TÜVRheinland Zertifizierungsstelle

7

ANLAGE (Appendix): 1.21

*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.*

**Zertifizierungsstelle**

W. Hsu

**Dipl.-Ing. W. Hsu**

**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

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# Zertifikat *Certificate*

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**Zertifikat Nr.** *Certificate No.*
R 50156693

**Blatt** *Page*
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| **Ihr Zeichen** *Client Reference* | **Unser Zeichen** *Our Reference* | **Ausstellungsdatum** | *Date of Issue (day/mo/yr)* |
|---|---|---|---|
| 12060494/ST160712 | ZTW1-YML- 11016931 059 | 06.08.2012 | |

**Genehmigungsinhaber** *License Holder*
Adda Corporation
6, East Section, Industry 6 Road
Pingtung City 900
Taiwan, R.O.C.

**Fertigungsstätte** *Manufacturing Plant*
Adda Corporation
6, East Section, Industry 6 Road
Pingtung City 900
Taiwan, R.O.C.

**Prüfzeichen** *Test Mark*

www.tuv.com TÜVRheinland ID:2000000000
• BAUART GEPRÜFT
• TYPE APPROVED

**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)

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ANLAGE (Appendix): 1 - 1.54

*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.*
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**Zertifizierungsstelle**

TÜV Rheinland LGA Products GmbH TÜVRheinland Zertifizierungsstelle

**Jerry F. R. Yang**

**TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg**
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Fax: (+49/221)8 06 - 39 35 http://www.tuv.com/safety

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