



昌 勛 股 份 有 限 公 司
Dr . POWER CORPORATION

零 件 規 格 書 / 承 認 書
SPECIFICATION FOR APPROVAL

CUSTOMER : _____

DESCRIPTION : Switching Adapter

MODEL : PMC20W0512P

CUSTOMER PART NO : _____

APPROVED SIGNATURES

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Rev	Date	Description	Designed	Checked	Approved
A	2024/9/11	Release		Po Chen	

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SPECIFICATION FOR APPROVAL

規格承認書

CLIENT	
客戶	:
ITEM	Switching Adapter
產品名稱	:
OUR MODEL NO.	PMC20W0512P
本廠型號	:
CLIENT'S MODEL NO.	:
GREEN STANDARD	RoHS <input checked="" type="checkbox"/> REACH <input checked="" type="checkbox"/> PAHS <input type="checkbox"/>
環保標準	: CPSIA <input type="checkbox"/> EN71-3 <input type="checkbox"/>

Latest Edition 新版	Date 日期	Prepared by 制作人	Checked by 審核人	Checked by 審核人	Audited by 覆核人	Approved by 確認人
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IMPORTANT NOTE 重要通知

- According to our ISO-9000 & MRP system, we cannot process your P.O before you approve this specification by signing, stamping and returning the "Declaration of approval" section of this specification.
為符合我司 ISO-9000 及 MRP 管理系統要求，我方必需於收到貴司簽核本規格書後才能處理貴司訂單，請盡快蓋章簽署此規格書的(簽認聲明)回傳我司，以免延誤貴司訂單的生產計劃。
- This specification is prepared for the internal use of _____ only. Disclosure or distribution of part or whole of this specification without the written permission of Helms-Man Transformers Co., Ltd. is strictly prohibited. All rights are reserved by Helms-Man Transformers Co.,Ltd.
這規格承認書祇供 _____ 公司內部使用.本規格書版權全屬興茂電源有限公司所擁有。

Declaration of Approval : We approve and accept every clause listed in this specification. 簽認聲明：我可認可及接受本規格書所列出的所有條款。	Approved by 確認人簽名蓋章
	Name and Position 確認人名稱及職稱
	Approval date 確認日期

工程部編號 E.R.N: YG12645-00	樣辦單編號 Sample Form No.: B221-05-013
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Important Notes (重要事項) :

(I) Unless otherwise specified , all above-listed items of tests are carried out by Electronic Load.

除非有例外說明,以上各項測試,皆使用電子負載執行.

(II) Unless otherwise specified , all tests are governed by the relevant clauses of the safety standards under which this model is designed and certified (Specification Contents item 7).

除非有例外說明,所有測試,皆按照此型號所屬的安規標準內的相關測試條款執行(規格書內容第七項).

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1. SCOPE/概述

The document details the electrical ,mechanical and environmental specifications of a SMPS , the power supply provides 20W continuous output power.

資料詳細描述了一款20W（連續輸出功率）開關電源的電氣特性，結構性及環境等要求。

The power supply shall meet the ROHS requirements.

此款電源符合ROHS要求。

Description/描述:

- SMPS Adapter(Wall mount)/插牆式適配器 SMPS Adapter(Desk-top)/桌面型適配器
 Open Frame/開放式結構 SMPS Unit (Wth Case)/帶鐵殼型
 Others/其他

2. Input Characteristics /輸入特性

2.1 Input Voltage & Frequency/輸出電壓與頻率

The range of input voltage is from 90Vac to 264Vac.

輸入電壓範圍：從90Vac到264Vac。

	Minimum/最小	Rating/額定值	Maximum/最大
Input voltage/輸入電壓	90 Vac	100 Vac ~240Vac	264Vac
Input Frequency/輸入頻率	47 Hz	50Hz/60Hz	63Hz

2.2 Input AC Current/輸入交流電流

0.5Amax @ 90Vac input & Full load/在90Vac輸入和滿載條件下最大0.5A.

2.3 Average Efficiency/平均效率

2.3.1 While output 5V , input 115Vac and 230Vac ,the average efficiency of PCB end is more than 81.39%. The test point is at 25%, 50%, 75%, 100% of max load respectively.

在輸出電壓5V，輸入115Vac和230Vac條件下，PCB板端平均效率不小於81.39%。測試點分別是最大載的25%，50%，75%，100%。

2.3.2 While output 9V, input 115Vac and 230Vac , the average efficiency of PCBend is more than 85.47%.The test point is at 25%, 50%,75%, 100% of max load respectively.

在輸出電壓9V，輸入115Vac和230Vac條件下，PCB板端平均效率不小於85.47%。測試點分別是最大載的25%，50%，75%，100%。

2.3.3 While output 12V,input input 115Vac and 230Vac , the average efficiency of PCBend is more than 85.48%.The test point is at 25%, 50%,75%, 100% of max load respectively.

在輸出電壓12V，輸入115Vac和230Vac條件下，PCB板端平均效率不小於85.48%。測試點分別是最大載的25%，50%，75%，100%。

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2.4 No-Load Input Power Dissipation/輸入空載功率損耗

While input 115Vac or 230Vac and the output is no load, the input power loss must be less than 0.1W.

在輸入115Vac/230Vac ,空載功耗小於0.1W.

3. Output Characteristics/輸出特性

3.1 Static Output Characteristics<Vo & R+N>/靜態輸出特性<輸出&紋波+噪音>

All data was measured at the end of end of 0.8m Type Cord/使用0.8m TYPE C線測試。

Output	Load Condition/負載條件	Output Range	R+N	Remark
Rating	Load 100%	輸出電壓範圍	紋波與噪聲	備註
+ 5.0V	3.0A	4.6V~5.4V	300mVp-p	
+ 9.0V	2.22A	8.55V~9.45V	300mVp-p	
+12.0V	1.67A	11.40V~12.60V	300mVp-p	

Ripple & Noise: Tested by a oscilloscope using 20MHz bandwidth and the output is paralleled a 0.1uF ceramic capacitor and a 10Uf electrolysis capacitor, (Under the input Voltage 100~240Vac)

紋波與噪聲：量測時示波器選用20MHz帶寬限制，輸出端要並聯一顆0.1uF的陶瓷電容一顆10uF的電解電容（輸入電壓100~240Vac）

3.2 Line/Load Regulation/線性/負載調整率

All data was measured at the end of end of 0.8m Type Cord/使用0.8m TYPE C線測試。

Output	Load Condition/負載條件		Line Regulation	Load Regulation	Remark
Rating	Min.Load	Max.Load	線性調整率	負載調整率	備註
+ 5.0V	0A	3.0A	4.6V~5.4V	4.6V~5.4V	
+ 9.0V	0A	2.22A	8.55V~9.45V	8.55V~9.45V	
+12.0V	0A	1.67A	11.40V~12.60V	11.40V~12.60V	

4. Protection Requirements/保護要求

4.1 Over Current Protection /過流保護

4.1.1 While output 5V,OCP Point Limited :In Min3.1A~Max 3.8A /保護點限制在3.1A~Max 3.8A;

4.1.2 While output 9V,OCP Point Limited :In Min2.22A~Max 2.6A /保護點限制在2.22A~Max 2.6A;

4.1.3 While output 12V,OCP Point Limited :In Min1.67A~Max 2A /保護點限制在1.67A~Max 2A;

The output shall hiccup when the over current applied to the output, and shall beself-recovery when the fault condition is removed

當過電流時，輸出將進入打嗝模式，當過流情況解除後，產品將會自動恢復正常

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4.2 Short Circuit Protection/短路保護

The input power shall decrease when the output is short to GND: the power supply shall not damage ,and shall be self-recovery when the fault condition is removed.

當輸出對地短路時，產品輸入功率降低且不會損傷，當短路情況解除後，產品將會自動恢復正常。

4.3 Over Voltage Protection/過壓保護

The power supply shall protection when the output over voltage, the power supply shall No damage.當輸出過壓時，產品保護且不會損傷。

5. Environment Requirements/環境要求

Ambient Temperature 環境溫度	0	-----	40	°C
Relative Humidity 相對濕度	40	-----	93	%

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6. Safety Standards/安規標準

The power supply is designed to meet the following safety standards at 25°C ambient temperature: 在室溫 25°C 下這電源供應器設計合符以下安規標準:

Safety Standard 安規標準
BS/EN/IEC60950-1 <input type="checkbox"/> UL/CSA 60950-1 <input type="checkbox"/> AS/NZS60950-1 <input type="checkbox"/> J60950-1 <input type="checkbox"/> K60950-1 <input checked="" type="checkbox"/> GB4943.1 <input checked="" type="checkbox"/>
BS/EN/IEC60065 <input type="checkbox"/> UL/CSA 60065 <input type="checkbox"/> AS/NZS60065 <input type="checkbox"/> GB8898 <input type="checkbox"/>
BS/EN/IEC62368-1 <input checked="" type="checkbox"/> UL/CSA62368-1 <input checked="" type="checkbox"/> AS/NZS62368-1 <input checked="" type="checkbox"/> J62368-1 <input type="checkbox"/>
BS/EN/IEC61558-1+BS/EN/IEC61558-2-7 <input type="checkbox"/> BS/EN/IEC61558-1+BS/EN/IEC61558-2-16 <input type="checkbox"/> GB19212.1 <input type="checkbox"/>
AS/NZS61558-2-7 <input type="checkbox"/> AS/NZS61558-2-16 <input type="checkbox"/> AS/NZS60335-2-29 <input type="checkbox"/> AS/NZS60335-2-29 Annex AA <input type="checkbox"/>
BS/EN/IEC61347-1+BS/EN/IEC61347-2-13 <input type="checkbox"/> J61347-2-13 <input type="checkbox"/> J60335-2-29 <input type="checkbox"/> J60335-2-29 Annex AA <input type="checkbox"/>
BS/EN/IEC60335-1 <input type="checkbox"/> BS/EN/IEC60335-2-29 <input type="checkbox"/> BS/EN/IEC60335-2-29 Annex AA <input type="checkbox"/>
GB4706.1+GB4706.18 <input type="checkbox"/> GB4706-1 <input type="checkbox"/> GB19212.17 <input type="checkbox"/>
UL1310 <input type="checkbox"/> CSA-C22.2 No. 223 <input type="checkbox"/> UL697 <input type="checkbox"/> CSA-C22.2 No. 173 <input type="checkbox"/>

7. EMC Standards /電磁兼容標準

Refer to related safety standards. 參考相關安全標準

UL/CSA 60950-1, UL/CSA 60065, UL/CSA62368-1, UL1310, UL697, CSA-C22.2 No. 223, CSA-C22.2 No.173, UL8750	FCC Part 15 subpart B, ICES-003
BS/EN/IEC60950-1, AS/NZS60950-1, BS/EN/IEC62368-1, AS/NZS62368-1, J62368-1	BS/EN55032 (or BS/EN55022, BS/EN55013), BS/EN55035(or BS/EN55020, BS/EN55024), BS/EN61000-3-2/3
BS/EN/IEC60065, AS/NZS60065, BS/EN/IEC62368-1, AS/NZS62368-1, J62368-1	BS/EN55032 (or BS/EN55022, BS/EN55013), BS/EN55035(or BS/EN55020, BS/EN55024), BS/EN61000-3-2/3
BS/EN/IEC61558-1+ BS/EN/IEC61558-2-7 BS/EN/IEC61558-2-16, AS/NZS61558-2-16	BS/EN55014-1, BS/EN55014-2, BS/EN61000-3-2/3
BS/EN/IEC60335-1, AS/NZS60335-1 BS/EN/IEC60335-2-29, AS/NZS60335—2-29	BS/EN55014-1. BS/EN55014-2, BS/EN61000-3-2/3
BS/EN/IEC61347-2-13, AS/NZS61347-2-13	BS/EN55015, BS/EN61547, BS/EN61000-3-2/3

8. Hi-Pot/ 耐高壓測試

Input to output 輸入對輸出 3000VAC at 1 sec (秒)

Cutoff current 截止電流 10mA

9. Max Touch Current(Max Earth Leakage Current)/

最大接觸電流(最大漏電電流測試)

250µA max. at 250Vrms

10. MTBF Standard/平均無故障時間標準

Minimum 50,000 hours MTBF at max rated load & 25°C ambient temperature

在室溫 25°C 下及最大額定負載下，平均無故障時間為最少 50,000 小時。

11. Insulation Resistance /絕緣阻抗

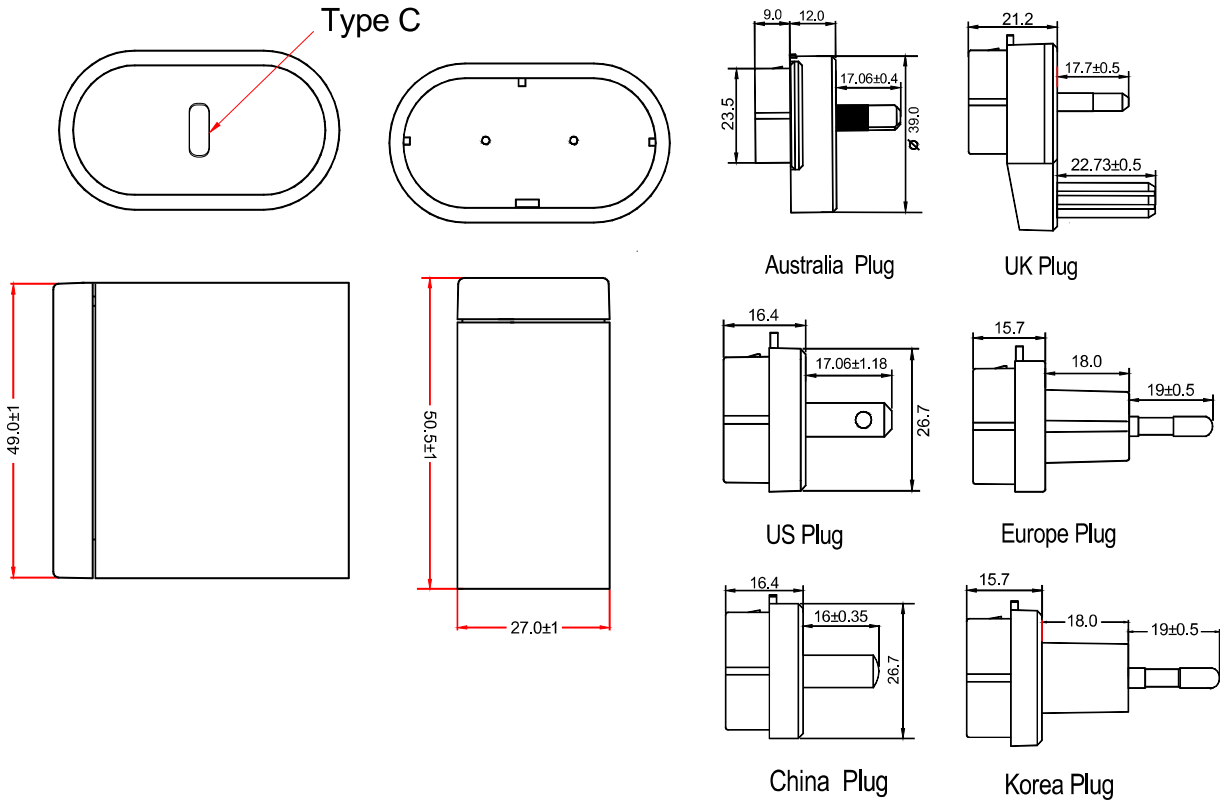
Input to Enclosure / Output (初對殼 / 次) : $\geq 7M \text{ ohm (DC 500V , 1 minute)}$

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12. MECHANICAL CHARACTERISTIC 機械規格

12.1 Mechanical Dimensions 外形尺寸 (for Ref. only 參考用)

顏色 Colour: 黑色 Black Colour.

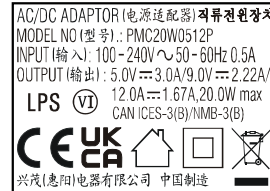
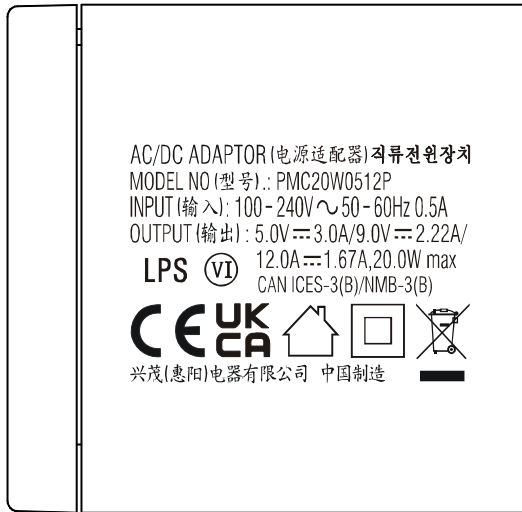


Type-C Port Polarity (Type-C 端口極性)

A1	A4	A5	A6	A7	A8	A9	A12
GND	VBUS	CC1	D+	D-	NC	VBUS	GND
GND	VBUS	NC	D-	D+	CC2	VBUS	GND
B12	B9	B8	B7	B6	B5	B4	B1

單位
Unit: mm

12.2 Model Labels 產品標籤

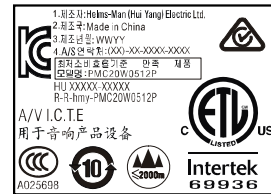


嘜頭表達方法: 激光打印
 Marking method: laser printing

注: 1:1 嘜頭 長 x 寬: 25x35mm
 1:1 scale 25x35mm (LxW)

注: 嘜頭表達方式為激光打印時, 生產週期
 在嘜頭的右下角

Date Code = WWYY
 WW-Week
 YY-Year



注: 1:1 嘜頭 長 x 寬: 25x35mm
 1:1 scale 25x35mm (LxW)

嘜頭表達方法: 激光打印
 Marking method: laser printing

認證未申請
 Approval not available yet

13. Packing / 包裝規格

包裝規格: 標準紙格包裝
 Packing Spec.: Standard packing with card tray.

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14. Sample Primary Test Report / 樣品初測報告

Test Items 測試項目	Test Condition 測試條件		Sample No. and test result 樣品編號及測試結果						Pass/ Fail
			1#	2#	3#	4#	5#	6#	
Unload output Voltage 空載輸出電壓 (V) 4.6VDC~5.75VDC (輸出 1) 8.55VDC~9.45VDC (輸出 2) 11.4VDC~12.6VDC (輸出 3)	90Vac	輸出 1 (5V3A)	5.1	5.12	5.09	5.11	5.11	5.12	Pass
		輸出 2 (9V2.22A)	9.13	9.13	9.08	9.02	9.06	9.04	
		輸出 3 (12V1.67A)	12.12	12.13	12.11	11.95	12.05	12.09	
	264Vac	輸出 1 (5V3A)	5.12	5.12	5.09	5.11	5.09	5.12	Pass
		輸出 2 (9V2.22A)	9.13	9.16	9.11	9.02	9.06	9.04	
		輸出 3 (12V1.67A)	12.12	12.17	12.11	11.95	12.05	12.04	
Full load output Voltage 滿載輸出電壓 (V) 4.6VDC~5.4VDC (輸出 1) 8.55VDC~9.45VDC (輸出 2) 11.4VDC~12.6VDC (輸出 3)	90Vac	輸出 1 (5V3A)	4.88	4.87	4.87	4.9	4.85	4.88	Pass
		輸出 2 (9V2.22A)	8.98	9.01	8.96	8.89	8.93	8.92	
		輸出 3 (12V1.67A)	12.02	12.03	12.02	11.86	11.95	11.94	
	264Vac	輸出 1 (5V3A)	4.87	4.87	4.86	4.89	4.85	4.88	Pass
		輸出 2 (9V2.22A)	8.94	9	8.96	8.89	8.93	8.92	
		輸出 3 (12V1.67A)	12.02	12.03	12.01	11.86	11.96	11.95	
Output ripple Voltage 輸出紋波電壓 (mV) <300mV	90Vac	輸出 1 (5V3A)	102	98	92	96	92	94	Pass
		輸出 2 (9V2.22A)	92	82	88	82	86	88	
		輸出 3 (12V1.67A)	84	96	78	88	86	80	
	264Vac	輸出 1 (5V3A)	98	94	94	88	92	92	Pass
		輸出 2 (9V2.22A)	94	84	82	82	84	82	
		輸出 3 (12V1.67A)	84	76	78	78	76	74	
Short Circuit Test 短路保護測試 No damage occur 無危險現象	90Vac		OK	OK	OK	OK	OK	OK	Pass
	264Vac		OK	OK	OK	OK	OK	OK	OK
Hi-pot Test 耐電高壓測試 (at 10mA)	3000Vac 10mA 1 sec(秒)		OK	OK	OK	OK	OK	OK	Pass
Insulation Resistance 絕緣阻抗 ≥7M ohm	500VDC 1 minute		OK	OK	OK	OK	OK	OK	Pass

15. Energy Efficiency Test Report / 能效測試報告

WORKING CONDITIONS 測試條件	TEST PARAMETER 測試項目	DC:	5V	3A	81.39%	DC:	9V	2.22A	85.47%	DC:	12V	1.67A	85.48%
		25%	50%	75%	100%	25%	50%	75%	100%	25%	50%	75%	100%
		0.75A	1.5A	2.25A	3A	0.555A	1.11A	1.665A	2.22A	0.4175A	0.835A	1.2525A	1.67A
115V	Output Voltage (V) 輸出電壓	5.05	5.03	4.98	4.93	9.08	9.04	9.01	8.98	12.12	12.09	12.07	12.05
	Input Power (W) 輸入功率	4.41	8.85	13.25	17.90	5.88	11.49	17.18	23.16	5.92	12.01	17.28	23.29
	Efficiency 效率(%)	85.88%	85.25%	84.57%	82.63%	85.70%	87.33%	87.32%	86.08%	85.47%	84.06%	87.49%	86.40%
	Average Efficiency 平均效率(%)	84.58%				86.61%				85.86%			
	No load Power (W) 空載功率	0.08W				0.08W				0.08W			
230V	Output Voltage (V) 輸出電壓	5.05	5.03	4.98	4.93	9.08	9.03	9.00	8.98	12.12	12.10	12.08	12.05
	Input Power (W) 輸入功率	4.47	8.91	13.26	17.73	5.87	11.46	17.13	22.96	5.97	11.76	17.43	23.40
	Efficiency 效率(%)	84.73%	84.68%	84.50%	83.42%	85.85%	87.46%	87.48%	86.83%	84.76%	85.91%	86.81%	86.00%
	Average Efficiency 平均效率(%)	84.33%				86.90%				85.87%			
	No load Power (W) 空載功率	0.09W				0.09W				0.09W			
WORKING CONDITIONS 測試條件	TEST PARAMETER 測試項目	DC:	5V	3A	81.39%	DC:	9V	2.22A	85.47%	DC:	12V	1.67A	85.48%
		25%	50%	75%	100%	25%	50%	75%	100%	25%	50%	75%	100%
		0.75A	1.5A	2.25A	3A	0.555A	1.11A	1.665A	2.22A	0.4175A	0.835A	1.2525A	1.67A
115V	Output Voltage (V) 輸出電壓	5.05	4.99	4.93	4.88	9.10	9.07	9.04	9.01	12.10	12.07	12.05	12.03
	Input Power (W) 輸入功率	4.41	8.84	13.25	17.91	5.89	11.58	17.39	23.38	5.98	11.68	17.48	23.41
	Efficiency 效率(%)	85.88%	84.67%	83.72%	81.74%	85.75%	86.94%	86.55%	85.55%	84.48%	86.29%	86.34%	85.82%
	Average Efficiency 平均效率(%)	84.00%				86.20%				85.73%			
	No load Power (W) 空載功率	0.08W				0.08W				0.08W			
230V	Output Voltage (V) 輸出電壓	5.05	4.99	4.93	4.87	9.09	9.07	9.04	9.01	12.11	12.06	12.05	12.03
	Input Power (W) 輸入功率	4.47	8.91	13.26	17.81	5.88	11.53	17.35	23.00	6.02	11.71	17.38	23.07
	Efficiency 效率(%)	84.73%	84.01%	83.65%	82.03%	85.80%	87.32%	86.75%	86.97%	83.99%	86.00%	86.84%	87.08%
	Average Efficiency 平均效率(%)	83.61%				86.71%				85.98%			
	No load Power (W) 空載功率	0.09W				0.09W				0.09W			